



Developing a knowledge base in *Conservation Agriculture* in Lao PDR, 2008 - 2009

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Developing a Knowledge base in *Conservation Agriculture in Lao PDR*

1. Context¹

Conservation Agriculture (CA) has been introduced in Lao PDR since 2003 in the framework of research and extension activity funded by the French Cooperation. Activities in the field of CA have been initiated by the National Agriculture and Forestry Research Institute in Xieng Khouang and in southern Xayabury in 2003 with the start of the Lao National Agroecology Programme (PRONAE). In 2006, PASS – PCADR, started extension activities on this topic promoting no-till systems in the southern Xayabury. Through an iterative and integrative approach, a closed partnership has been established between PASS and PRONAE based on the generation of innovative systems, validation and extension of no-till systems integrated with livestock components, training of the stakeholders, monitoring and evaluation, identification of financial mechanisms to sustain this dynamic under the current framework of governmental agencies...In parallel, NAFRI and PRONAE have tried to develop partnership with others development projects as Nam Ngum River Development Sector Project.

Since 2005, the PCADR program, through two of its interlinked components (PRONAE and PASS) is working toward increasing the capacity of the Lao institutions to carry on research and extension activities related to Conservation Agriculture. NAFRI and CIRAD are the main scientific partners to this activity, and are providing Technical Assistance for the implementation of PRONAE.

Activities related to Conservation Agriculture are also benefiting currently in Lao PDR from:

- The PROSA: AFD funded Program, hosted by the Ministry of Agriculture and Forestry and providing Technical Assistance (1 CIRAD expert) as well as the necessary financial means to develop a National strategy for Conservation Agriculture in Lao PDR.
- The PAMPA: two sentences (PAMPA is an AFD/FFEM/MAE funded program giving supports to projects and agencies involved in CA under the network of the French Cooperation).
- ORCATAD: two sentences (ORCATAD is an EU funded project).
- Lao Extension Agriculture Project (NAFES/LEAP, SDC funded project) involved on the implementation of a Lao extension approach, production of extension materials...

As PCADR program is touching to an end in 2009, a comprehensive capitalization process is necessary in order to capture and analyse the experience in Conservation Agriculture in Lao PDR, produce scientific, technical as well as communication documents adapted to various audiences: farmers, extensionist, practitioners, and researchers as well as decisions makers.

As conservation agriculture is promoted through various sources of funding in Lao PDR, it is proposed:

- 1 : to have a single and common capitalization plan/strategy

¹ Many references in this document (developing a database, set of dimensions) are stemmed from the work conducted by Dr. Rico Lie (Wagenigen University, Communication and Information Studies) in March 2008 in supporting NAFRI for the development of a knowledge base in Conservation Agriculture (CA) through ORCATAD project (Open Resource on Conservation Agriculture for Trade and Development, EU funding). ORCATAD is a European Union funded project aiming at promoting conservation agriculture in Lao PDR.

- 2 : to base the capitalization process on the means (human and financial) available at the level of different projects/programs

2. Rationale and Objectives

After four seasons (2005-2008) and anticipating the phasing out (in mid-2009) of the main program promoting Conservation Agriculture in LAO PDR, the Ministry of Agriculture and Forestry places as a priority the development of a knowledge base in Conservation Agriculture (CA) as an output of a comprehensive process of capitalization on Conservation Agriculture.

The capitalization process on Conservation Agriculture will have four main dimensions:

1. Collecting and analysing the results of the experiences in Conservation Agriculture.
2. *Elaborating in a collaborative way a set of knowledge documents (papers, media, extension tools, scientific papers, policy notes...) adapted to various audiences.*
3. *Organizing communication events and dialogue in order to interact with various audiences (promotion and advocacy). A particular attention will be given on organizing interaction with decision and policy makers at various levels in Lao PDR, in line with the main objective of the PCADR and PROSA programs ("supporting the elaboration or rural development policies/strategies based on experience").*
4. *Preserving knowledge and information on the long run.*

The capitalization Strategy and Plan is developed in this document. Objectives, means mobilized, methodologies are exposed as well as the main outputs expected

It is considered in the current approach that the main outputs of the Capitalization process will aggregate into a **"knowledge base of systems and practices"** in the field of conservation agriculture. This knowledge base will serve different purposes and will be accessible through the use of ICTs² (website, data base, DVD, VCD, and CD-Rom).

3. Collecting and analysing the results of the experiences in Conservation Agriculture

3.1 Information already existing:

Several initiatives have already been taken in order to monitor and collect first hand information on the results of the experiences developed in Conservation Agriculture, as well as on the evolution of the operating context.

a) The PASS monitoring and evaluation system

b) "Monitoring and Evaluation", Farming system changes in Sayaburi province. Powerpoint presentation. 43 p. This document (based on more than 900 household interview conducted in 2006, and updates of the annual M&E system) is providing primary and secondary data on: land use evolution, evolution of land preparation costs, evolution of costs of and use of inputs, evolution of crop diversification, dissemination of no-tillage practices, perception of no-tillage by households (disaggregated on several factors like: manpower, farm size, access to services, ..),

c) G. Lestrelin mission report. Issued 2007 and based on 2006 data. "suivi evaluation des adoptions 2006". 71 p,

d) Several scientific reports and articles (Boyer 2006, Tran Quoc et al. 2005, Bounthong et al. 2005, Lienhard et al. 2006, Tran Quoc et al. 2006, Lienhard et al. 2007).

² Information and Communication Technologies

d) Activity reports of PASS/PRONAE.

3.2 Approaches proposed to analyze the results of the experiences in Conservation Agriculture

3.2.1. First batch of “dimensions” to be considered for assessing the systems proposed:

During the last mission of Dr. Rico Lie (Open Resource on Conservation Agriculture for Trade and Development – ORCATAD, Wageningen University) in March 2008, in supporting NAFRI on the development of a knowledge and data base on CA, a set of dimensions for assessing the practices has been identified by this author and adopted by NAFRI. These dimensions have been firstly defined to describe a selection of exemplary practices for a database but their use will be extended to all products (source books, leaflets, audiovisuals supports) developed on the domain of conservation agriculture to define and to characterize each systems and technologies.

The selection of the dimensions was guided by the following principles (Lie and Tivet, 2008):

- The selection of the dimensions serves an inward looking function as well as an outward looking function. Inward means that the focus is on the quality of life of the farmers and appropriate extension services. Outward means that the focus is on the sector of policy makers and governing bodies, and the academic and scientific communities at large.

Using the selected set of dimension, Conservation Agriculture systems and technologies will be described in a qualitative (through descriptive stories) and quantitative ways (through results obtained on-field). The stories will highlight aspects of the dimensions (environmental sustainability, quality of life, regulatory environment and service provision, commercialization and advocacy) that are relevant and typical to the particular practice.

The selected dimensions are the following (Lie and Tivet, 2008):

- **Quality of Life:** This dimension is about the sensitivity that a practice has for the improvement of the quality of the life of the farmer and his or her livelihood. The Quality of Life dimension adopts the Sustainable Livelihoods Approach (SLA) as developed by DFID.³ The quality of life equals a sustainable livelihood and can thus be seen as depending on the different identified capitals. For the purpose of assessing systems and practices in conservation agriculture on the dimension of quality of life, we have adopted the following capitals as being of relevance: a.) the human capital; b.) the social capital; c.) the physical capital; d.) the natural capital, and e.) the financial capital.
 - Human capital is defined by the OECD as “the knowledge, skills and competences and other attributes embodied in individuals that are relevant to economic activity”. (OECD, 1998:9⁴). It refers to the kinds and levels of education needed, to training demands and to required skills and technological knowledge. It also includes health and psychological well-being of the farmer.
 - Social capital is the whole set of social relations that are relevant in one way or the other for production purposes. “For the majority of writers it is defined in terms of *networks*, *norms* and *trust*, and the way these allow agents and institutions to be *more effective in achieving common objectives*” (Schuller⁵). It refers to community issues and collective organizational requirements. Issues that are of interest here are for instance: sensitivity to labor inputs and availability of labor, sensitivity to gender (un)balances, and sensitivity to cultural embeddings. Social capital also includes cultural embedding and appropriateness. A new

³ See for instance: http://www.livelihoods.org/info/guidance_sheets_pdfs/section2.pdf.

⁴ OECD (1998). Human Capital Investment: An International Comparison, Paris: Organisation for Economic Cooperation and Development.

⁵ www.open.ac.uk/lifelong-learning/papers/393B8E05-0008-65B9-0000015700000157_TomSchuller-paper.doc

practice can for instance be a continuation of an existing practice or the change to the new practice can be too vast, and the gap between the traditional practice and the new practice can turn out to be too big.

- Physical capital consists of non-human assets that are made by humans and are required for or used in production activities, e.g. technical equipment. But besides technical equipment, physical capital also includes infra-structural capital, which refers to communication infrastructures, roads, irrigation dams and any physical improvements made to nature.
- Natural capital refers to water, land, air, plants, etc... This capital is about the potential that nature offers. It is commonly divided into renewable resources (agricultural crops, vegetation, wild life), and, non-renewable resources (fossil fuels and mineral deposits).
- “Financial capital denotes the financial resources that people use to achieve their livelihood objectives” (DFID). It refers to the availability of cash or equivalents that people apply to improve their livelihood and their quality of life.

The economic dimensions for each system proposed will be presented following classic methodologies used for assessing cropping systems. The objective of the work will notably be to compare the economics of the set of innovative systems (annual crops, livestock) proposed by the NAFRI/PRONAE/PASS research/extension work and also with conventional systems commonly use in southern Xayaburi and Xieng Khouang. When considering the economics of the tillage and no-tillage systems, the following areas affecting profit will notably be addressed:

- Changes in yield per hectare
- Changes in cost per hectare (land productivity)
- Changes in net income / man.day of work (labor productivity)
- Changes in pre-financing requirements (inputs, land preparation, etc)
- Changes in the distribution of labor requirements
- Impact on net income risk.

The economic analysis will also be conducted at the level of other important actors of the current agricultural landscape: the service providers (notably the providers of mechanized land preparation services). It is indeed important to measure how far the introduction of the new system of equipment promoted by PASS/PRONAE will affect positively or negatively the profits of land preparation service providers: taking into account costs of equipment purchase, maintenance costs, etc. Profitability of investment in tractors will notably be compared between conventional and conservation tools.

For each of the systems proposed, data available through the current M&E system will be compiled and complemented by additional field surveys. The assessment of the economic performances of the systems proposed will require interaction between research, practitioner/extensionists and farmers themselves. The work will necessitate an update of the current knowledge on the economics of the cropping/farming systems locally practiced. It is notably important to revisit the economics of the various systems in light to the current trend of price changing for the main cash crops.

The 5 capitals cover the human, inter-human (social), extra-human (man-made artefacts), and non-human (nature) aspects of the quality of life. It is not necessarily so that the larger the capital, the higher the quality of life is. However, it is envisaged that the quality of life is subject to the qualitative existence of these capitals, individually and in relation to each other. The description of the dimension of the ‘quality of life’ should therefore include reviews of the characteristics of these capitals and score the amount of sensitivity to these capitals – **A high score on this dimension means that the practice has a positive influence on the improvement of the quality of life of the farmers and is thus sensitive to issues related to human, social, physical, and natural capital.**

- **Environmental Sustainability**: This dimension is about maintaining the qualities that are valued in the natural environment on a long-term basis. To what extent does the practice sustain the environment and conserve agricultural diversity? To what extent are the production techniques environmentally sound? To what extent does the practice have a positive result on the maintenance of biodiversity and the totality of the eco-system? To what extent does the practice promote the natural functioning of the eco-system? Good integrated management aims to maintain enough diversity to allow interesting eco-systemic properties to emerge. – **A high score on this dimension means that the practice scores high on maintaining the natural eco-system and promoting the natural functioning of the eco-system.**
- **Regulatory Environment and Service Provision**: This dimension is about the availability of a supportive political climate and regulatory environment. It also includes the availability of rural services; extension services and other support services. To what extent is the political and regulatory environment supportive to the practice? Is the practice appropriate and does it fit into the existing environment? Issues of concern are for instance: the political environment; regulation; market access; taxes; the financial context; credit provision; reasonable pricing; effective extension support; facilitating marketing...⁶)? Does the government enable a positive environment? – **A high score on this dimension means that the regulatory environment is supportive towards the practice and that rural services are appropriate and in place.**
- **Commercialization and Advocacy**: This dimension is of a different nature than the three dimensions identified earlier. It measures the potential that a practice has for trade and advocacy. It captures the 'market outlook' of a practice by identifying characteristics of the practice that have high marketing potential, and thus high economic potential. These characteristics can come out of the above mentioned three dimensions, a combination of these three dimensions, or from a totally different field of operation of the practice. A practice could for instance perfectly fit into the discussion on the establishment of a new 'good for development'-label⁷, or it could nicely fit within existing trade relations... – **A high score on this dimension means that the practice has (a) characteristic(s) that ha(s)ve high potential for use in (social) marketing.**

This approach has the advantages to be rather broad, comprehensive, structured and in addition to bring in new concepts into the debate on and advocacy for Conservation Agriculture. It fits particularly to apply this approach when the capitalization process will have researchers and to some extent decision makers as audiences.

⁶ QAMAR, M.K. (2007). Agricultural Technology Management, Transfer and Commercialization: An Overview with Focus on Asia-Pacific Region, paper presented at the International seminar, "Best Practices in Agricultural Technology Transfer", held from 5 to 9 November 2007 at Colombo, Sri Lanka, organized by the Asian Productivity Organization, Tokyo in collaboration with the Ministry of Agriculture Development and the National Productivity Secretariat, Sri Lanka.

⁷ ELLIS, K. & WARNER, M. (2007). Is the Time Ripe for "a Good for Development" Product Label, ODI Opinion Paper, October.
(http://www.odi.org.uk/IEDG/Business_Development_Performance/Papers/ODI_op88_Good_for_Development.pdf)

3.2.2 Adoption of the systems and characterization of the research/extension approach promoted by the PRONAE/PASS

Adoption of the technical systems:

After four seasons of research and field extension work on conservation agriculture techniques, it is important to draw a picture of the current and possible future trends for the adoption of the systems by farmers. Although such work has to some extent already been undertaken on a continuous basis by NAFRI/PRONAE teams in the past periods, it looks important to produce a final set of analysis and documents on the situation in both provinces.

This will necessitate an updating of the 2006 study (conducted by G. Lestrelin) as well as additional field work in order to add more qualitative information.

It would notably necessitate the organization of individual interviews and focus group in order to understand the reason for adoption or partial adoption of the systems. This study would be comprehensive and include the economic aspects as well as other potential factors for non-adoption (reluctance to innovation, risk aversion, etc.) and adoption (quality of the extension approach, potential subsidization effect from project environment).

The study on the trends for adoption and non-adoption will also particularly look at the possible partial adoption by farmers of the “technological package” proposed by the PRONAE/PASS. Issues and prospects for partial adoption will be looked at (advantages, potential risks, etc).

Adoption will also be looked at the level of the service providers: tractorists, tractor owners, input suppliers...the willingness of all those actors to engage into the provision of the package of services that are necessary to practice Conservation Agriculture in the area will be assessed : land preparation services, specific inputs, credit supply etc.. Factors determining the “willingness to adopt” from this type of actors will be highlighted in a way to provide guidance for future replication of the approach.

Adoption of the specific research/extension approach promoted by the PRONAE/PASS:

What will be examined here is to what extent the approach (understood as: methodology + ad hoc human and financial resources) developed by PRONAE/PASS has been adopted and/or has a potential to be adopted, by the Lao research/extension system, at various levels.

This will be done from different angles. One important angle will again be the financial aspects and specific care will be paid upon developing capitalization documents that are highlighting the costs associated to the research/extension approach on Conservation Agriculture. Costs will be sorted out under different categories, preferably similar to the three categories of expenses of the Lao public spending system: capital expenses, recurrent costs, investments.

Simple comparison will be done between the costs associated to the Conservation Agriculture Research/extension approach and the financial resources available through the Lao research/extension system.

This last angle of analysis of the conditions for adoption (at the level of the Lao extension/research system) will be particularly used in a view to prepare capitalization/advocacy documents targeted toward a decision-maker audience.

Activities proposed:

Joint activities proposed relatively to the assessment of the economic aspects of the systems proposed and the current trends for adoption are:

- An updating of the M&E system of PASS and PRONAE and analysis on the adoption of CA practices⁸ in the southern Xayabury: it will be conducted, using the same methodologies. It is planned to mobilise the same expert, Mr. Guillaume Lestrelin (LCG). Indicative TORs are given in annex 1,

- Conducting a additional field study in Xieng Khouang (annex 2) focus on four objectives: 1) analysis of the agrarian transition, 2) adoption of no-till systems and land management, 3) analysis of farming systems evolution (income, labour inputs, off-farm activities etc), and 4) development of a simple tool to monitor farming systems changes (based on PASS experience). This study would be implemented by a consortium LCG - NAFRI/AFPRC. This Consultant team could also be assisted by students from Nabong faculty recent graduates and French students, during the period of October 2008 to April 2009. This team would be interacting with and would receive guidance from PRONAE/PASS/UC teams/TAs.

The consultant in charge of the updating of the PASS/PRONAE M&E system as well as the updating of the study on the adoption of the Conservation Agriculture systems, would also be allocated with time to provide guidance to the team of French/lao student in charge of conducting the field study in Xieng Khouang province.

4. Elaborating in a collaborative way a set of knowledge documents (papers, media, extension tools, scientific papers, policy notes...) adapted to various audiences.

The objective of MAF is three-fold. First, it wants to conserve a knowledge base for the agricultural sector at large by presenting systems/practices and related materials in conservation agriculture. The second objective is to operate as a pool of educational material to be used by smallholders, extension service providers, agronomists and educational institutions operating in the same domain. Third, MAF also wants this work to be of relevance as a promotional tool and as an advocacy tool in the domain of policy making (at different levels). As such it will emphasize issues of sustainability (environmental health, economic profitability and social and economic equity).

Based on the experiences of PASS and PRONAE (components of PCADR) several products will be created:

- Audiovisual supports available to a wide audience using different formats (TV, DVD and VCD),
- Field guides on Conservation Agriculture for smallholders, extension officers, trainers and agronomists,
- Training materials for agronomists, extension officers and educational institutions,
- Assessment of the evolution of the agrarian systems, economic aspects of the innovations and current trends of adoption,
- Documents and tools to interact with decision-makers,
- Synthetics and scientific papers on different issues,

Several formats will be used to facilitate accessibility of target groups to these different products. The formats are described below and will refer mainly to hard copy (source book, leaflet), soft copy (DVD, VCD, and CD-Rom) and internet support. Most of these products will be directly accessible through MAF/NAFRI website and others link (CIRAD...). Moreover, a data base accessible through non-proprietary means (producing a web based version that is accessible with a Firefox browser and designing a stand alone LINUX version) will be created on NAFRI website to present a selection of exemplary systems and practices on CA (Lie and Tivet, 2008).

The elaboration of the various documents will mobilize primarily the teams from PRONAE/PASS component of PCADR with ad hoc support from Central Unit.

⁸ Lestrelin G. rapport de mission d'appui. Suivi évaluation des adoptions au sud de la province de Xayabury.

Specific supports will also be required for the elaboration of the audiovisual supports (see specific document in annex).

As mentioned in the previous chapter of the document, the PCADR is planning to mobilize team from LCG, NAFRI – AFPRC, Lao/French students in order to assist in the analytical work at field level as well as in drafting capitalization documents. TORs for this specific work are in the process to be fully developed and given in annex to this document on a draft basis.

Those teams of student will be adding to the Consultant team (LCG, NAFRI – AFPRC) and receive guidance from TAs as well as from Ministry of Agriculture and Forestry staff.

2. The specific targets groups

There are four specific target groups:

1. The first target group consists of smallholders/farmers. The knowledge base aims to be of relevance at different levels of detailed technical information integrating the biophysical conditions and the different capitals (human, financial, natural, physical and social).
2. The second target group consists of extension officers, agronomists and educational institutions in the field of conservation agriculture. For educational institutions, an overview of basic information and general description of practices will be sufficient. For extension officers and agronomist on the other hand it is important that the knowledge base not only provides an overview of basic information on exemplary systems and practices, but also provides detailed technical (and scientific) information.
3. The third target group is the national community of governmental and non-governmental organizations operating in the domain of agriculture or related domains. For this target group some products of the knowledge base can be used as an advocacy tool.
4. The fourth target group is the (international) scientific community operating in the domain of agriculture. For this target group specific productions will be achieve as scientific articles on conservation agriculture.

4. The products

4.1- Database on exemplary practices in *Conservation Agriculture* (from Lie and Tivet, 2008)

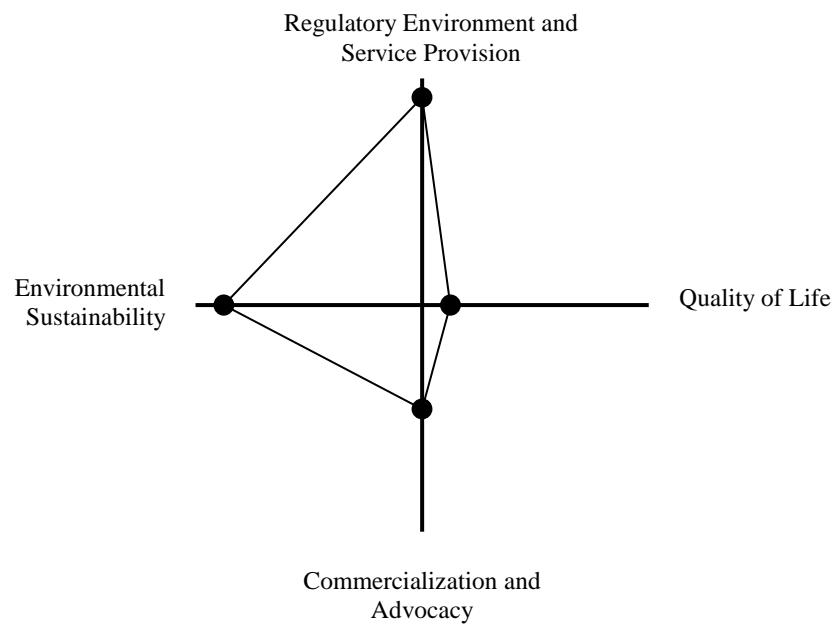
A database presenting exemplary practices in the field of Conservation Agriculture will be developed and each practices will be accompanied by a so-called 'web'-visual, an image that visualizes the scores on the 3 inward looking dimensions (Environmental Sustainability, the Quality of Life, and, the Regulatory Environment and Service Provision) and the 1 outward looking dimension (Commercialization and Advocacy).

The content of the database consists of two main areas and several sub-areas:

1. Exemplary Practices and Materials (audiovisual materials, source books, field guide, scientific articles)
2. Related Material
 - a. Selected bibliographies in several fields of interest
 - b. Selected set of links to relevant information on the internet
 - c. Networking in conservation agriculture

Below you will find an example of how the scores on the four different dimensions can be visualized in a quadrangle (this visual representation will be used only to describe exemplary practices for the database). A first description of systems and practices is presented in appendix 3.

Fig 1. Example of a Quadrangle



4.2- Audiovisual products available to a wide audience

Three main products are expected as 1) documentary, 2) thematic video and 3) technical issues. The three first target groups presented above are directly concerned by this activity. Terms of reference of these products are presented in appendix 2. The technical issues will be broadcasted on VCD and will come with the source book described below (annex 4).

4.3- Field guide in Conservation Agriculture for farmers/smallholders

A field guide, constituted of 8 booklets, is created for farmers/smallholders. Training field guide (see paragraph 4.4) is also developed for extension officers, agronomists and educational institutions.

This field guide for farmers will be built on the following chapters:

Booklet 1: Main principles of no-till systems and crop rotations

This first chapter refers to the three main principles of no-till systems and cover crops as 1) permanent soil cover, 2) no-mechanical actions and burning, and 3) crop rotations.

Booklet 2: How to implement no-till system integrating local knowledge and situations

Main objective of this chapter is to highlight the need to follow an iterative process in implementing no-till systems using local resources (species and equipments) and integrating biophysical and socio-economic environments.

Booklet 3: Use of equipments (sowing machine, sprayers, rolling knife, fertilizer broadcaster)

Different equipments used for no-till systems are described emphasizing small-scale machinery locally available for smallholders (one sowing line, hand jab seeder, rolling knife and fertilizer broadcaster). Conditions of use and all setting are described allowing self-management of these equipments. Blueprint of some equipments are provided.

Booklet 4: Weeds management under no-till systems

Under no-till systems different weeds management schemes are followed using herbicide, mechanical (rolling knife) and/or biological control (permanent soil cover, shading and/or allelopathic effect). These three ways are described and this chapter emphasizes the importance of crop rotations and full soil cover in following an integrated weed management.

Booklet 5: Management of soil fertility

Simple pictures are used in this chapter emphasizing the impact of crop residues in preserving and enhancing soil fertility (physical, biological and chemical) and water retention through soil aggregation. For extension officers, agronomists and educational institutions detailed information are given on the level of mineral elements exported for each crop (maize, soybean, rice...), and on the processes of particles aggregation.

Booklet 6: Crop management and use of cover crops

In reference to the situation in the southern Xayabury and in Xieng Khouang this chapter described the use of local species (rice-bean, job's tears, maize...) to improve rotational sequence and the efficiency of no-till systems. A progressive approach is presented from the use of local species to the integration of exogenous species (*Cajanus cajan*, *Brachiaria ruziziensis*, *Stylosanthes guianensis*, *Crotalaria* sp., *Eleusine coracana*...).

Management (establishment, seed production, control) of cover crops is described using bibliography reference and local experiences of PASS and PRONAE. More detailed information is given for educational institutions on the nutritional value of each multipurpose species.

Booklet 7: Implementation and management of fodder species

This chapter deals with the establishment and management of fodder species integrating adaptability of each specie commonly used in Lao PDR and in the two provinces. Materials from NAFRI and CIAT (FSLP project) are also used in this chapter.

Booklet 8: Integrating livestock components (cattle fattening and pig raising)

Cattle fattening and pig raising practices are fully developed in this chapter presenting technical (breeding, housing, and animals' health) and economic considerations (nature of animal feeding, protein availability at local level). For pig raising experiences of PASS is fully described and evaluated.

Posters

Additional products as posters will be created to be on display in the villages, authorities' offices (PAFO, DAFO), and governmental agencies (NAFES, NAFRI). It is planned to produce a set of 6 posters illustrating most of the topics presented above.

4.4- Documents and tools for interaction with decision makers

Interaction with decision maker will necessitate the elaboration of specific documents under formats adapted to an audience that is used to concise and synthetic briefs.

At this, stage, considering the objectives of PROSA and PCADR as a whole and the challenge of having Conservation Agriculture principles and methods rolled out into the Lao Extension and Research system, and further, adopted by farmers, the following topics could be covered by the documents to be prepared :

- 1) The agricultural policy implications of Lao experience in Conservation Agriculture: management of pioneer fronts (land allocation, management of value chains), measuring and mitigating the impacts of current extension of cash crops for exports.
- 2) Implications of Conservation Agriculture experience for the coordination of research and extension in Lao PDR (national and decentralized level). This will encompass the role for the public sector as well as well as guidelines for the enrollment of the private sector in promoting conservation agriculture practices. This document will notably highlight in a condensed form :
 - o *How Public Agencies can facilitate adoption*
 - Education and Information
 - Financial Assistance
 - Research and Development of Practices
 - Extension orientations to conservation agriculture
 - Promoting Sustainable Agriculture Practices
 - Encouraging Farmers Involvement and Organization
 - Public agency funding / funding and incentives
 - Public administration and management
 - Programs and regulations
 - Knowledge and expertise
 - o *How Commercial Firms and Dealerships can help/hinder conservation agriculture adoption*
 - Education and Information support
 - Client Oriented Extension
 - Products and Offerings
 - Funding and incentives
 - Private Sector Incentives for Sustainable Practices

- 3) Implication for future programs: as the Lao Ministry of Agriculture and Forestry is currently engaged in a process of designing future Program Based Approaches⁹ in the rural development sector, it is of importance for the various projects/programs promoting currently Conservation Agriculture in Lao PDR to prepare in a coordinated manner a set of clear documents that could facilitate future preparatory work of those PBAs at MAF level. Those documents should propose concrete contents/set of activities, for future components of programs. As the phasing out of PCADR and are preparatory work for future PBAs at MAF level are coinciding, a window of opportunities is open.

It is sought at this stage to elaborate the various documents addressed to a “decision maker” audience, on the basis of the other types of documents described in this capitalization program. This will thus be done primarily through an exercise of synthesis.

This can thus be based on the current skills and PCADR and PROSA staff/TAs but could also be done by engaging collaboration with the AFPRC (Agriculture and Forestry Policy Research Center) from NAFRI, notably for the elaboration of a set of policy briefs.

4.5- Training and technical materials for agronomists, extension officers and educational institutions

More detailed information will be given for extension officers, agronomists and educational institutions for the different parts of the source book described above. Specifically for extension officers, agronomist and educational institutions criteria (to complete the 4 dimensions) will be used to detail agronomic characteristics of systems and practices. The selected criteria are the following:

- Restoration of eco-systemic properties:
 - Chemical (nutritional function of the cover crops, recycling nutrients...),
 - Physical (bulk density, soil permeability, structural stability of the aggregates),
 - Biological soil fertility,
 - Biological control of pests.
- Economics of Conservation Agriculture Techniques
 - Valuating Conservation agriculture,
 - Conservation Agriculture / vs Conventional. Economic point of view,
 - Economics of Conservation agriculture tools: specific farm equipment,
 - Long term benefits.
- Technological requirement:
 - To install and manage the cover crops,
 - Flexibility of cropping calendar,
 - Need of specific inputs and equipments and access to credit,
 - Labour inputs, gender sensitivity, cultural changes,
- Environmental sustainability:
 - Use of chemical pesticides and/or organic products, mechanical and biological control of the cover crops,
 - Preservation or enhancing soil potentialities (control of soil erosion, Carbon sequestration),
 - Functional biodiversity,
 - Water management (flux and quality).

⁹ one initiative exist for the Northern Uplands and another is already launched for the southern uplands and midlands

Additional training materials will be created and based on the following topics:

Topic 1: An integrated approach of research and development to promote conservation agriculture (initial assessment, creating innovative systems, training and communication, organizing farmer groups and validation processes, scaling-up and monitoring).

Topic 2: Field guide adapted from: 1) *Participatory ecology training and Living Soils, Training Exercises for Integrated Soils Management* - The FAO Programme for Community IPM in Asia, 2) UEPG - Brazil and 3) from experiences of PROSA, PRONAE and PASS.

Soil texture, fertility (structure, aggregation, OM), and water retention

Simple tools are provided to extension officers, agronomists and educational institutions to analyze soil texture, structure and land situation (level of “degradation”). These tools are mainly visual and do not need sophisticated technologies and measuring instruments. Soil texture, soil aggregation, biological activity, soil compaction are the main products developed in this chapter.

Nutrients source and behavior

To understand the source of macro-nutrients, where they are stored and how they are lost from the system.

Crop growth, development stages and yield components

Simple indicators are provided to link development stages and growth for cereals (rice, maize) and legumes in order to define critical periods for yield components establishment.

Topic 3: How to exchange with farmer groups and to organize training (methodology)

Methodology of training and exchanges with farmer is presented; works of LEAP and experiences of PASS, PROSA and PRONAE are used.

4.6- Synthetic and scientific articles

Synthetic documents

The economics of Conservation Agriculture

This booklet will provide with a particular insight on the economic aspects of Conservation Agriculture in the Lao context. It will provide a synthesis of the economic returns farmers/smallholders can expect from practicing conservation agriculture under different cropping system. Aspects such as labor, investments costs, input costs, etc will be detailed.

Dimensioning a research/extension activity on conservation agriculture

This booklet deals with the costing and dimensioning of a research/extension activity at local (khumban, district or sub-provincial levels) in Lao PDR. This booklet will have as audience DAFO/PAFOS planners and present in a simple form a breakdown of the main costs associated to the methodology developed in Conservation Agriculture.

Scientific documents

These products concern the national and international communities. The scientific paper will be submitted to international journals with reviewers.

Paper 1: Intensification, diversification and spatial differentiation in the southern Xayabury (annex 5)

Paper 2: Conditions for the adoption of no-till systems

Paper 3: Improved pastureland and cattle fattening opportunities on the Plain of Jars

Paper 4: Effects of tillage, no-till systems and cropping sequence on yield components of maize

Paper 5: Effects of tillage, no-till systems and cropping sequence on soil biological activities

Paper 6: Effects of tillage, no-till systems and cropping sequence on physical and chemical soil characteristics

Paper 7: Improved pigsty in rural area

Paper 8: No-till systems and cropping sequence influence distribution and sequestration of organic carbon

Paper 9: No-till systems and cropping sequence influence yield components of maize

Paper 10: No-till systems and cropping sequence influence physical soil characteristics

5. The location and the formats.

The goal is to have most materials available in 3 languages: Lao, French and English. Currently, most documents and materials of projects are available in Lao and French, not in English.

5.1- A strategic location on the Web for the knowledge base on *Conservation Agriculture*

Connecting the database and the different materials and tools in conservation agriculture to the website of NAFRI seems the most logical option for positioning the knowledge base. It emphasizes the research component of the enterprise and profits from the established position of NAFRI in Laos. The NAFRI website is well developed and incorporates already a database consisting of documents relevant to agriculture in Laos (LAD - Lao Agricultural Database <http://lad.nafri.org.la/lad/index.html>).

Setting up a completely new website for the knowledge base is not desirable as it might become too isolated. In order to become sustainable the knowledge base must find a relevant and efficient position amongst the existing Agricultural Knowledge and Information System (AKIS). One should be aware of not creating a parallel system of knowledge and information.

5.2- DVD, VCD, CD-Rom, source books, leaflet, brochures

The different materials created will be available on different supports as source books, leaflet, brochures but also DVD, VCD and CD-Rom. For the audiovisual products and particularly the technical issues a set of VCD will be provided to farmers and extension officers.

6. The process of evaluating materials

Creating these products will enforce to follow the following steps:

1. Approval of the general content of each product and support identified (source book, poster, DVD, VCD, CD-Rom, articles...) by the committee presented below (*Institutional framework*),
2. Creation (writing, drawing, filming...) and translation of technical issues (hard copy and video): the products will be submitted to smallholders, extension officers and agronomists for validation before step 4.
3. Creation (writing, drawing, filming...) and translation of others products (documentary, thematic, training materials, synthetic document...).
4. All products will be submitted to the editing group (team no. 4, see below *Labour inputs and periods*).
5. Submission and presentation of all products to the committee represented by DoP, NAFRI, UC-PCADR, PROSA, AFD/FFEM and CIRAD for validation.
6. Layout,
7. Publishing and broadcasting.

7. Institutional framework

Department of Planning and International Cooperation of MAF acts as the executive agency of PCADR and PROSA, it will delegate the implementation to UC-PCADR, NAFRI/PRONAE, PASS, and PROSA. Moreover, NAFRI will receive the support of Wagenigen University and CIRAD through ORCATAD project (EU funding).

A committee will be organized to approve step 1 (approval of the general content of each product) and to approve all products after steps 2, 3 and 4 describe above. This committee will be composed by:

- Department of planning and international cooperation of MAF,
- NAFRI,
- NAFES,
- UC-PCADR,
- PROSA,
- Smallholders, agronomists and extension officers for technical issues,
- French Development Agency will act also as a representative of FFEM,
- CIRAD.

8. Labour inputs and periods

Several teams will be organized through human resources from UC-PCADR, NAFRI – IMC (*Information management centre*), PROSA (students and national expertise), PASS, PRONAE, CIRAD and Wagenigen University. The distribution of the activities is presented hereafter.

A first team is organized to produce audiovisual supports; it is composed of six persons (two from NAFRI – IMC, two persons from the department of culture and communication of Xayabury and Xieng Khouang, one person from UC-PCADR and one person from PROSA).

A second team of technicians (UC-PCADR, PROSA-students, NAFRI-IMC, contractual staff funded by ORCATAD, and consultants from NAFES/LEAP) is organized to design, and translate (in lao and english) in partnership with technical team of PASS and PRONAE technical and training materials (source books,

leaflet, and posters). This team integrates person specialized on creating materials, drawing, and translating; they will be hired through the network of NAFRI – IMC, UC-PCADR, and NAFES/LEAP.

This team will also be responsible in developing a specific website in CA on NAFRI website and the structure of the database (producing a web based version that is accessible with a Firefox browser and designing a stand alone LINUX version).

Tasks and responsibilities:

- Coordinating the activities: “project” coordination team (NAFES/LEAP, NAFRI-IMC, UC-PCADR, PROSA coordinator),
- Database and website (two technicians from NAFRI – IMC),
- Creating materials, drawing and translating (2 consultants from NAFES/LEAP, 2 contractual staff from NAFRI-IMC, 2 students from PROSA, and technical staff from PRONAE, PASS and PROSA: trainers, translators, extension officers/agronomists).

A third team includes national technical assistance from PASS and PRONAE and will validate with the first target groups (smallholders and extension officers) the materials created.

A fourth team is in charge of editing the materials before validation by the committee. This team should be composed of at least three persons.

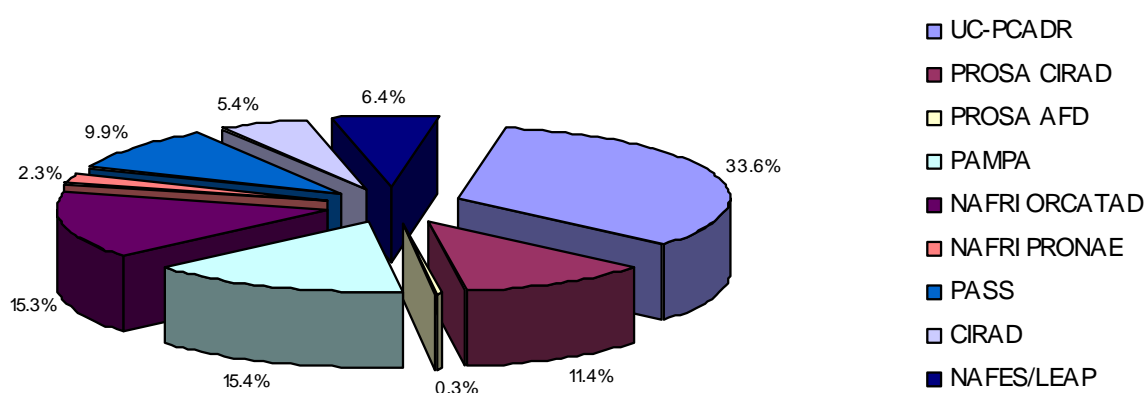
A precise time schedule is presented below to fulfil these activities; the collaboration and transfer of information from one team to another one will be crucial in the success of this project.

Products	Expected results	Broadcasting and targets	Associated partners
DATABASE	Exemplary practices in CA	Website and VCD, CD-Rom Policy-makers, Agronomists, Educational institutions and International community	NAFRI – IMC, CIRAD, PRONAE, and Wagenigen
AUDIOVISUAL	Documentary to be broadcast on international network	TV + DVD + website, wide audience	NAFRI – IMC, UC-PCADR Provinces of Xieng Khouang and Xayabury PASS, PRONAE, PROSA
	Thematic issues (6 to 8) to be broadcast on national network	TV + VCD + website, wide audience	
	Technical issues	Lao Extension system (VCD) + website, smallholders, extension officers, educational institutions, agronomists	
FIELD GUIDE	Detailed technical issues in CA	Books, Website and CD	NAFES/LEAP, NAFRI-IMC, PRONAE, PASS, PROSA, UC-PCADR
TRAINING MATERIALS	Field guides for trainers, agronomists and educational institutions	Books, Website and CD	
SYNTHETIC AND SCIENTIFIC ARTICLES	Scientific information in CA (characterization of no-till systems ; adoption processes and methodology)	Articles, scientific community + website	NAFRI/PRONAE, PASS, CIRAD, NAFRI – AFPRC, UC-PCADR

9. Funding

Different programmes (PCADR and PROSA), components of PCADR (PASS and PRONAE), institutions (NAFES/LEAP, NAFRI/IMC, CIRAD) and donors (AFD, FFEM, EU, SDC) are requested to contribute to this program of capitalization in *Conservation Agriculture*; a distribution of funding is presented in the table below.

PASS and PRONAE will make available two translators to work on these different products (see line translating source book and training materials) from April 2008 to end of June 2009. Equipments and investments (video recorder, computers, building renovation...) are presented in this projected budget and will be used for others topics and current projects activities. The distribution of funding between the different programmes and projects is presented in the graph below.



Total	UC-PCADR	PROSA		PAMPA	NAFRI		PASS	CIRAD	LEAP
		CIRAD	AFD		ORCATAD	PRONAE			
385,467 \$	129,225	43,822	1,200	59,435	59,035	8,750	38,250	20,650	24,600

Budget 2008 – 2009

		Expected sources of funding											
		Units	Cost USD	Total (USD)	UC-PCADR	PROSA		PAMPA	NAFRI		PASS	CIRAD	NAFES/LEAP
AUDIOVISUAL	Filming			\$8,525.00		\$8,525.00							
	Direct camera editing			\$12,245.00		\$12,245.00							
	Office			\$744.00		\$744.00							
	International travels from France to Laos	3	\$1,860.00	\$5,580.00		\$5,580.00							
	Perdiem external assistance	40	\$31.00	\$1,240.00		\$1,240.00							
	Fee for training	8	\$186.00	\$1,488.00		\$1,488.00							
	Travels in Laos			\$4,960.00				\$2,635.00	\$2,325.00				
	Perdiem National team	162	\$30.00	\$4,860.00					\$4,860.00				
	Per diem for Provincial cineast			\$4,500.00					\$4,500.00				
	Translation and subtitle			\$10,000.00			\$10,000.00						
	Editing and broadcasting DVD and VCD			\$12,000.00	\$6,000.00		\$6,000.00						
Equipments (video recorder, computers)	1	\$41,850.00	\$41,850.00					\$29,450.00			\$12,400.00		
Building renovation			\$7,750.00								\$7,750.00		
			Total	\$115,742.00	\$6,000.00	\$29,822.00	\$0.00	\$18,635.00	\$41,135.00	\$0.00	\$0.00	\$20,150.00	\$0.00
FIELD GUIDES	Coordination, facilitation and technical support in generating extension materials	1	\$18,600.00	\$18,600.00									\$18,600.00
	Creating, drawing and designing	1	\$4,650.00	\$4,650.00					\$2,650.00				\$2,000.00
	Translating	1	\$8,500.00	\$8,500.00	\$3,500.00					\$2,500.00	\$2,500.00		
	Editing (review)	1	\$3,000.00	\$3,000.00	\$3,000.00								
	Publishing (hard copy)	1	\$20,000.00	\$20,000.00				\$18,500.00					\$1,500.00
	Publishing (soft copy)	1	\$7,500.00	\$7,500.00	\$3,000.00			\$3,000.00					\$1,500.00
	Broadcasting	1	\$1,500.00	\$1,500.00									\$1,000.00
			Total	\$63,750.00	\$9,500.00	\$0.00	\$0.00	\$21,500.00	\$2,650.00	\$2,500.00	\$2,500.00	\$0.00	\$24,600.00
ANALYZING CURRENT EXPERIENCES AND PREPARING ASSOCIATED DOCUMENTS	Mobilizing socio-economic expert	1	\$62,970.00	\$62,970.00	\$32,970.00						\$30,000.00		
	Local expertise (NAFRI/AFPRC)	1	\$12,600.00	\$12,600.00	\$12,600.00								
	Translators	1	\$4,500.00	\$4,500.00	\$4,500.00								
	SIG specialist	1	\$9,600.00	\$9,600.00	\$9,600.00								
	Transport	1	\$11,195.00	\$11,195.00	\$11,195.00								
	Preparing policy briefs 1 (topics 1, 2)	1	\$7,000.00	\$7,000.00	\$7,000.00								
	Preparing policy briefs 1 (topic 3)	1	\$15,000.00	\$15,000.00	\$15,000.00								
				Total	\$122,865.00	\$92,865.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30,000.00	\$0.00
TRAINING MATERIALS	Creating, drawing and designing	1	\$2,000.00	\$2,000.00					\$2,000.00				
	Translating	1	\$9,300.00	\$9,300.00				\$4,300.00		\$2,500.00	\$2,500.00		
	Editing	1	\$3,000.00	\$3,000.00				\$3,000.00					
	Publishing (hard copy)	1	\$5,000.00	\$5,000.00					\$5,000.00				
	Publishing (soft copy)	1	\$2,500.00	\$2,500.00	\$2,500.00								
	Broadcasting	1	\$1,000.00	\$1,000.00	\$1,000.00								
				Total	\$22,800.00	\$3,500.00	\$0.00	\$0.00	\$7,300.00	\$7,000.00	\$2,500.00	\$2,500.00	\$0.00
POSTERS/LEAFLETS...	Creating, drawing and designing	1	\$2,000.00	\$2,000.00	\$2,000.00								
	Translating, review	1	\$1,000.00	\$1,000.00	\$1,000.00								
	Editing	1	\$1,000.00	\$1,000.00	\$1,000.00								
	Publishing (hard copy)	1	\$12,000.00	\$12,000.00				\$12,000.00					
				Total	\$16,000.00	\$4,000.00	\$0.00	\$0.00	\$12,000.00	\$0.00	\$0.00	\$0.00	\$0.00
SYNTHETIC, SCIENTIFIC ARTICLES, REPORTS / SPECIAL ISSUES	Translating	1	\$2,500.00	\$2,500.00						\$2,500.00			
	Editing	1	\$3,000.00	\$3,000.00	\$1,000.00					\$750.00	\$750.00	\$500.00	
	Broadcasting	1	\$1,000.00	\$1,000.00						\$500.00	\$500.00		
				Total	\$6,500.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,750.00	\$1,250.00	\$500.00
WEB SITE AND DATABASE	Designing and managing Web site	1	\$3,750.00	\$3,750.00					\$3,750.00				
	Designing and managing Database in CA	1	\$4,500.00	\$4,500.00					\$4,500.00				
				Total	\$8,250.00	\$0.00	\$0.00	\$0.00	\$8,250.00	\$0.00	\$0.00	\$0.00	\$0.00
GENERAL SUPPORTS	Travel France – Laos (4 french students)	4	\$1,200.00	\$4,800.00	\$2,400.00	\$2,400.00							
	Fee students	27	\$400.00	\$10,800.00	\$6,000.00	\$4,800.00							
	Visa and commodities	5	\$180.00	\$900.00	\$360.00	\$540.00							
	Fee students (4 Lao students)	24	\$100.00	\$2,400.00	\$1,200.00		\$1,200.00						
	Perdiem	120	\$20.00	\$2,400.00	\$2,400.00								
	Office	12	\$155.00	\$1,860.00		\$1,860.00							
	Validation process with farmer and extensionists	1	\$2,000.00	\$2,000.00							\$2,000.00		
	Equipments	1	\$4,400.00	\$4,400.00		\$4,400.00							
				Total	\$29,560.00	\$12,360.00	\$14,000.00	\$1,200.00	\$0.00	\$0.00	\$0.00	\$2,000.00	\$0.00
				\$385,467.00	\$129,225.00	\$43,822.00	\$1,200.00	\$59,435.00	\$59,035.00	\$8,750.00	\$38,250.00	\$20,650.00	\$24,600.00

Budget 2008

		Expected sources of funding											
		Units	Cost USD	Total (USD)	UC-PCADR	PROSA		PAMPA	NAFRI		PASS	CIRAD	NAFES/LEAP
AUDIOVISUAL	Filming			\$8,525.00		\$8,525.00							
	Direct camera editing			\$12,245.00		\$12,245.00							
	Office			\$744.00		\$744.00							
	International travels from France to Laos	3	\$1,860.00	\$5,580.00		\$5,580.00							
	Perdiem external assistance	40	\$31.00	\$1,240.00		\$1,240.00							
	Fee for training	8	\$186.00	\$1,488.00		\$1,488.00							
	Travels in Laos			\$4,216.00				\$2,239.75	\$1,976.25				
	Perdiem National team	162	\$30.00	\$4,131.00					\$4,131.00				
	Per diem for Provincial cineast			\$3,825.00					\$3,825.00				
	Translation and subtitle			\$5,000.00			\$5,000.00						
	Editing and broadcasting DVD and VCD			\$0.00	\$0.00		\$0.00						
Equipments (video recorder, computers)	1	\$41,850.00	\$41,850.00					\$29,450.00			\$12,400.00		
Building renovation			\$7,750.00								\$7,750.00		
			Total	\$96,594.00	\$0.00	\$29,822.00	\$0.00	\$7,239.75	\$39,382.25	\$0.00	\$0.00	\$20,150.00	\$0.00
Field guides	Coordination, facilitation and technical support in generating extension materials	1	\$18,600.00	\$18,600.00									\$18,600.00
	Creating, drawing and designing	1	\$4,650.00	\$4,650.00					\$2,650.00				\$2,000.00
	Translating	1	\$8,500.00	\$8,500.00	\$3,500.00					\$2,500.00	\$2,500.00		
	Editing (review)	1	\$3,000.00	\$3,000.00	\$3,000.00								
	Publishing (hard copy)	1	\$10,000.00	\$10,000.00			\$8,500.00						\$1,500.00
	Publishing (soft copy)	1	\$3,750.00	\$3,750.00	\$1,125.00			\$1,125.00					\$1,500.00
	Broadcasting	1	\$0.00	\$0.00									\$0.00
			Total	\$48,500.00	\$7,625.00	\$0.00	\$0.00	\$9,625.00	\$2,650.00	\$2,500.00	\$2,500.00	\$0.00	\$23,600.00
ANALYZING CURRENT EXPERIENCES AND PREPARING ASSOCIATED DOCUMENTS	Mobilizing ST expert on analysing results and adoption	1	\$46,485.00	\$46,485.00	\$16,485.00						\$30,000.00		
	Local expertise for analysing adoption	1	\$6,300.00	\$6,300.00	\$6,300.00								
	Translators	1	\$2,250.00	\$2,250.00	\$2,250.00								
	SIG specialist	1	\$4,800.00	\$4,800.00	\$4,800.00								
	Transport	1	\$5,597.50	\$5,597.50	\$5,597.50								
	Preparing policy briefs 1 (topics 1, 2)	1	\$3,500.00	\$3,500.00	\$3,500.00								
	Preparing policy briefs 1 (topic 3)	1	\$7,500.00	\$7,500.00	\$7,500.00								
			Total	\$76,432.50	\$46,432.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30,000.00	\$0.00	\$0.00
TRAINING MATERIALS	Creating, drawing and designing	1	\$1,500.00	\$1,500.00					\$1,500.00				
	Translating	1	\$4,650.00	\$4,650.00				\$2,150.00		\$1,250.00	\$1,250.00		
	Editing (review)	1	\$1,500.00	\$1,500.00				\$1,500.00					
	Publishing (hard copy)	1	\$1,250.00	\$1,250.00					\$1,250.00				
	Publishing (soft copy)	1	\$625.00	\$625.00	\$625.00								
	Broadcasting	1	\$0.00	\$0.00	\$0.00								
				Total	\$9,525.00	\$625.00	\$0.00	\$0.00	\$3,650.00	\$2,750.00	\$1,250.00	\$1,250.00	\$0.00
POSTERS	Creating, drawing and designing	1	\$1,000.00	\$1,000.00	\$1,000.00								
	Translating, review	1	\$500.00	\$500.00	\$500.00								
	Editing	1	\$500.00	\$500.00	\$500.00								
	Publishing (hard copy)	1	\$3,000.00	\$3,000.00				\$3,000.00					
				Total	\$5,000.00	\$2,000.00	\$0.00	\$0.00	\$3,000.00	\$0.00	\$0.00	\$0.00	\$0.00
SYNTHETIC, SCIENTIFIC ARTICLES, REPORTS / SPECIAL ISSUES	Translating	1	\$1,250.00	\$1,250.00						\$1,250.00			
	Editing	1	\$1,500.00	\$1,500.00	\$500.00					\$375.00	\$375.00	\$250.00	
	Broadcasting	1	\$500.00	\$500.00						\$250.00	\$250.00		
				Total	\$3,250.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,875.00	\$625.00	\$250.00
WEB SITE AND DATABASE	Designing and managing Web site	1	\$2,812.50	\$2,812.50					\$2,812.50				
	Designing and managing Database in CA	1	\$3,375.00	\$3,375.00					\$3,375.00				
			Total	\$6,187.50	\$0.00	\$0.00	\$0.00	\$0.00	\$6,187.50	\$0.00	\$0.00	\$0.00	\$0.00
GENERAL SUPPORTS	Travel France – Laos (4 french students)	4	\$1,200.00	\$4,800.00	\$2,400.00	\$2,400.00							
	Fee students	20	\$400.00	\$8,000.00	\$3,200.00	\$4,800.00							
	Visa and commodities	5	\$180.00	\$900.00	\$360.00	\$540.00							
	Fee students (4 Lao students)	12	\$100.00	\$1,200.00	\$600.00		\$600.00						
	Perdiem	60	\$20.00	\$1,200.00	\$1,200.00								
	Office	6	\$155.00	\$930.00		\$930.00							
	Validation process with farmer and extensionists	0.5	\$2,000.00	\$1,000.00							\$1,000.00		
	Equipments	1	\$4,400.00	\$4,400.00		\$4,400.00							
				Total	\$22,430.00	\$7,760.00	\$13,070.00	\$600.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00
				\$267,919.00	\$64,942.50	\$42,892.00	\$600.00	\$23,514.75	\$50,969.75	\$5,625.00	\$35,375.00	\$20,400.00	\$23,600.00

Budget 2009

		Expected sources of funding											
		Units	Cost USD	Total (USD)	UC-PCADR	PROSA		PAMPA	NAFRI		PASS	CIRAD	NAFES/LEAP
						CIRAD	AFD		ORCATAD	PRONAE			
AUDIOVISUAL	Filming			\$0.00		\$0.00							
	Direct camera editing			\$0.00		\$0.00							
	Office			\$0.00		\$0.00							
	International travels from France to Laos	3	\$1,860.00	\$0.00		\$0.00							
	Perdiem external assistance	40	\$31.00	\$0.00		\$0.00							
	Fee for training	8	\$186.00	\$0.00		\$0.00							
	Travels in Laos			\$744.00				\$395.25	\$348.75				
	Perdiem National team	162	\$30.00	\$729.00					\$729.00				
	Per diem for Provincial cineast			\$675.00					\$675.00				
	Translation and subtitle			\$5,000.00				\$5,000.00					
	Editing and broadcasting DVD and VCD			\$12,000.00	\$6,000.00			\$6,000.00					
Equipments (video recorder, computers)	1	\$41,850.00	\$0.00						\$0.00		\$0.00	\$0.00	
Building renovation			\$0.00										
			Total	\$19,148.00	\$6,000.00	\$0.00	\$0.00	\$11,395.25	\$1,752.75	\$0.00	\$0.00	\$0.00	\$0.00
Field guides	Coordination, facilitation and technical support in generating extension materials	1	\$18,600.00	\$0.00									
	Creating, drawing and designing	1	\$4,650.00	\$0.00									
	Translating	1	\$8,500.00	\$0.00	\$0.00								
	Editing (review)	1	\$3,000.00	\$0.00	\$0.00								
	Publishing (hard copy)	1	\$10,000.00	\$10,000.00				\$8,500.00					\$1,500.00
	Publishing (soft copy)	1	\$3,750.00	\$3,750.00	\$1,125.00			\$1,125.00					\$1,500.00
	Broadcasting	1	\$1,500.00	\$1,500.00									\$1,500.00
			Total	\$15,250.00	\$1,125.00	\$0.00	\$0.00	\$9,625.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,500.00
ANALYZING CURRENT EXPERIENCES AND PREPARING ASSOCIATED DOCUMENTS	Mobilizing ST expert on analysing results and adoption	1	\$16,485.00	\$16,485.00	\$16,485.00						\$0.00		
	Local expertise for analysing adoption	1	\$6,300.00	\$6,300.00	\$6,300.00								
	Translators	1	\$2,250.00	\$2,250.00	\$2,250.00								
	SiG specialist	1	\$4,800.00	\$4,800.00	\$4,800.00								
	Transport	1	\$5,597.50	\$5,597.50	\$5,597.50								
	Preparing policy briefs 1 (topics 1, 2)	1	\$3,500.00	\$3,500.00	\$3,500.00								
	Preparing policy briefs 1 (topic 3)	1	\$7,500.00	\$7,500.00	\$7,500.00								
				Total	\$46,432.50	\$46,432.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TRAINING MATERIALS	Creating, drawing and designing	1	\$500.00	\$500.00					\$500.00				
	Translating	1	\$4,650.00	\$4,650.00				\$2,150.00		\$1,250.00	\$1,250.00		
	Editing (review)	1	\$1,500.00	\$1,500.00				\$1,500.00					
	Publishing (hard copy)	1	\$3,750.00	\$3,750.00					\$3,750.00				
	Publishing (soft copy)	1	\$1,875.00	\$1,875.00	\$1,875.00								
	Broadcasting	1	\$1,000.00	\$1,000.00	\$1,000.00								
				Total	\$13,275.00	\$2,875.00	\$0.00	\$0.00	\$3,650.00	\$4,250.00	\$1,250.00	\$1,250.00	\$0.00
POSTERS	Creating, drawing and designing	1	\$1,000.00	\$1,000.00	\$1,000.00								
	Translating, review	1	\$500.00	\$500.00	\$500.00								
	Editing	1	\$500.00	\$500.00	\$500.00								
	Publishing (hard copy)	1	\$9,000.00	\$9,000.00				\$9,000.00					
				Total	\$11,000.00	\$2,000.00	\$0.00	\$0.00	\$9,000.00	\$0.00	\$0.00	\$0.00	\$0.00
SYNTHETIC, SCIENTIFIC ARTICLES, REPORTS / SPECIAL ISSUES	Translating	1	\$1,250.00	\$1,250.00						\$1,250.00			
	Editing	1	\$1,500.00	\$1,500.00	\$500.00					\$375.00	\$375.00	\$250.00	
	Broadcasting	1	\$500.00	\$500.00						\$250.00	\$250.00		
			Total	\$3,250.00	\$500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,875.00	\$625.00	\$250.00	\$0.00
WEB SITE AND DATABASE	Designing and managing Web site	1	\$937.50	\$937.50					\$937.50				
	Designing and managing Database in CA	1	\$1,125.00	\$1,125.00					\$1,125.00				
			Total	\$2,062.50	\$0.00	\$0.00	\$0.00	\$0.00	\$2,062.50	\$0.00	\$0.00	\$0.00	\$0.00
GENERAL SUPPORTS	Travel France – Laos (4 french students)	0	\$1,200.00	\$0.00	\$0.00	\$0.00							
	Fee students	7	\$400.00	\$2,800.00	\$2,800.00	\$0.00							
	Visa and commodities	0	\$180.00	\$0.00	\$0.00	\$0.00							
	Fee students (4 Lao students)	12	\$100.00	\$1,200.00	\$600.00		\$600.00						
	Perdiem	60	\$20.00	\$1,200.00	\$1,200.00								
	Office	6	\$155.00	\$930.00		\$930.00							
	Validation process with farmer and extensionists	0.5	\$2,000.00	\$1,000.00							\$1,000.00		
	Equipments	0	\$4,400.00	\$0.00		\$0.00							
				Total	\$7,130.00	\$4,600.00	\$930.00	\$600.00	\$0.00	\$0.00	\$0.00	\$1,000.00	\$0.00
				\$117,548.00	\$63,532.50	\$930.00	\$600.00	\$33,670.25	\$8,065.25	\$3,125.00	\$2,875.00	\$250.00	\$4,500.00

10. Time schedule

At least two years will be necessary to achieve this goal in developing a knowledge base in Conservation Agriculture. Time schedule is presented below.

To the end of 2008 it is expected:

- To complete all audiovisuals supports,
- To complete a field guide for smallholder,
- To submit five synthetic/scientific articles,
- To open a specific web site in Conservation Agriculture. However, connecting the database and the different materials to the website of MAF/NAFRI could be expected by the end of PCADR.

To the end of PCADR:

- To complete the field guide and training materials for extension officers, agronomists and educational institutions,
- To connect the database and all materials to the website of MAF/NAFRI and others links,
- To submit five synthetic/scientific articles.

APPENDIX 1

Paix Indépendance Démocratie Unité Prospérité

Ministère de l'Agriculture et des Forêts
Programme de Capitalisation en Appui à la Politique de Développement Rural

Point d'Application du Sud de la Province de Sayaboury

Mission d'appui

Analyse de l'évolution du contexte socio-agro-économique dans les 4 districts du sud de Sayaboury et évaluation de l'impact des activités du projet

Appui à la capitalisation du système de suivi évaluation

Termes de référence

Rappel

Le PASS intervient dans les 4 districts du sud de la province de Sayaboury qui sont (du nord au sud) : Thongmixay, Paklay, Kenthao et Botène. Ces 4 districts abritent 163 villages pour une population totale de 125 104 habitants. La dynamique générale au sein de ces 4 districts est guidée par une forte intégration au marché thaïlandais qui procure des facilités financières et techniques aux exploitations agricoles. Les transferts technologiques ainsi amorcés dans le milieu des années 1990 se sont fortement amplifiés depuis 2000 avec le développement des infrastructures routières. Ainsi, la mécanisation lourde s'est développée sur une grande partie de la zone, aboutissant aujourd'hui au développement d'une filière unique, de maïs hybride avec labour et utilisation d'herbicides spécifiques. Cette filière est basée sur des pratiques agricoles minières qui menacent l'environnement, la fertilité des sols et la durabilité de la croissance économique de la région.

Dans ce contexte, le PASS a été défini afin d'améliorer la position des agriculteurs face aux filières de production et d'exportation développées par les opérateurs thaïlandais et de contribuer à préserver les potentialités de production et l'environnement de la région.

Contexte

En janvier 2006, Le PASS a débuté la mise en place d'un nouveau programme technique comprenant les activités décrites ci-dessous :

⇒ **Conservation des sols et de l'environnement**

Dans le but de préserver les potentialités de production de la zone, le PASS intervient dans la diffusion des techniques de Semis direct sur Couverture Végétale (SCV). La méthodologie de diffusion retenue se base sur la formation de groupements d'agriculteurs dans les villages d'intervention du projet. Ainsi en 2006 et 2007, 39 groupements d'agriculteurs ont été mis en place dans les 4 districts. Ces groupements rassemblent un total de 686 familles et représentent une surface de 831 ha.

⇒ **Diversification des sources de revenus**

Les enquêtes effectuées lors du dernier trimestre 2005 ont montré que la culture du maïs comptait pour plus de 70% dans les sources de revenus des populations de la zone d'activité du projet. Afin de limiter les risques liés à la dépendance économique des agriculteurs vis-à-vis de la filière maïs, le PASS développe des activités visant à favoriser la diversification culturelle (parcelles de démonstration, études filières,...) et améliorer les systèmes d'élevage porcin et bovin (groupements d'éleveurs avec appui technique sur l'alimentation, la santé animale et les bâtiments d'élevage).

⇒ **Amélioration de la commercialisation des productions agricoles**

Deux activités sont développées visant à améliorer le contexte de commercialisation des productions agricoles : un appui pour l'amélioration des greniers à maïs afin d'augmenter les capacités de stockage des productions au niveau local et la réhabilitation de 40 km de pistes rurales afin de désenclaver les zones de productions.

Afin d'évaluer les résultats et impacts des activités du projet, un système de suivi évaluation a été mis en place depuis 2005. Faisant suite à un état des lieux général (effectué avant la mise en place des activités mentionnées plus haut), une base de données actualisable a été mise en place permettant un suivi annuel de l'évolution d'un certain nombre d'indicateurs caractérisant le contexte socio-économique et agronomique au sein de 21 villages. Le projet dispose donc d'un outil qui lui permet d'évaluer annuellement les impacts de ses activités.

Après trois années de fonctionnement et la production de documents de suivi annuel, une vision plus globale apparaît nécessaire afin de caractériser la trajectoire socio-économique et agronomique de la zone d'intervention du projet et d'évaluer l'impact *à moyen terme* du projet.

Objectifs:

1. Cette mission a pour objectif principal une analyse globale des données socio-économiques et agronomiques recueillies dans le cadre du système de suivi évaluation mis en place par le PASS depuis 2005. Elle s'effectuera en complément du travail d'analyse annuel ayant été effectué par l'équipe du PASS.

Dans un premier temps, la mission devra permettre de mettre en évidence l'évolution à moyen terme du contexte socio-économique et agronomique (systèmes de production, usage des terres, activités économiques, revenus et dépenses des ménages, etc.) dans les différentes zones d'intervention du projet. Dans un deuxième temps, la mission devra permettre d'évaluer les impacts directs et indirects de l'intervention du projet sur les trajectoires de développement local et de comparer les résultats avec les objectifs initiaux du projet. A cet égard, les données générales issues du système de suivi évaluation du PASS et du PRONAE seront complétées par des données de suivi annuel collectées par l'équipe du PASS (résultats techniques et économiques sur les démonstrations mises en place directement par le projet et chez les groupements d'agriculteurs, enquêtes auprès des groupements d'agriculteurs, etc.). Sur cette base, l'analyse devra finalement mettre en évidence les facteurs majeurs conditionnant l'adoption et la diffusion des alternatives agro-économiques proposées par le PASS dans ses zones d'intervention.

Ce travail fera l'objet d'un rapport détaillé, présenté dans un format directement publiable par le PCADR.

2. Le second objectif de la mission d'appui est d'évaluer l'efficacité du système de suivi évaluation mis en place par le PASS depuis 2005 et, sur cette base, de proposer un système amélioré facilitant l'effort de pérennisation du projet et permettant une mise en place éventuelle à une plus grande échelle. A cet effet, le travail d'analyse des données décrit plus haut permettra d'évaluer la pertinence des données recueillies ainsi que de juger de l'efficacité du mode de collecte et du système de gestion des données.

Ce travail résultera dans la présentation d'un modèle optimisé de suivi évaluation, adaptable aux besoins du PCADR et de ses partenaires.

Rapport

Au cours de cette mission, le consultant devra produire un rapport détaillé, dans un format scientifique. A cet égard, le rapport devra intégrer :

- (1) une description du projet et de sa position vis-à-vis des enjeux socio-économiques et environnementaux régionaux,
- (2) sur la base du système de suivi évaluation mis en place par le PASS, une analyse détaillée des trajectoires de développement récentes observées dans la zone d'intervention du projet,
- (3) une évaluation objective de la manière dont le PASS a contribué à modeler les trajectoires de développement local,
- (4) une description des contraintes et limites en ce qui concerne la diffusion des innovation agro-économiques proposées,

(5) des propositions visant à améliorer ces processus de diffusion et adoption.

En outre, le consultant devra également présenter, sous forme de rapport annexe, un modèle optimisé de suivi évaluation qui pourra servir de support de réflexion au PCADR et à ses partenaires.

Profil du consultant

Le consultant devra avoir une très bonne maîtrise du logiciel Microsoft Access et, en particulier, une maîtrise de l'utilisation des requêtes pour produire des données statistiques sur l'évolution des variables socio-économiques et agronomiques recensées par la base de données du PASS.

Par ailleurs, chargé du travail d'analyse des données, le consultant devra également posséder une très bonne connaissance du milieu rural au Laos. Il s'agira donc d'un spécialiste du développement rural (agroéconomiste ou géographe) disposant d'une bonne expérience dans l'analyse du changement socio-économique et agricole au Laos.

Calendrier de mission

Cette mission d'appui nécessite un important travail d'analyse et de rédaction dont la durée est programmée à 60 jours, avec un début de mission aux alentours du 15 août 2008. La mission sera divisée en une partie analyse des données (15 jours), une partie réunions et rencontre des acteurs concernés (5 jours, notamment, le consultant devra prévoir une réunion avec des membres de la division 'Développement Rural' et 'planification' du département de la planification du MAF.), une partie rédactionnelle (30 jours) et une partie pour l'élaboration d'une réflexion sur la capitalisation du système de suivi évaluation (10 jours).

Budget (Euro)

Intitulé	CU	Nombre	Total
Déplacement	100	3	300
Honoraire	350	60	21,000
Perdiem	50	60	3,000
Total			24,300

APPENDIX 2



République Démocratique Populaire Lao
Paix Indépendance Démocratie Unité Prospérité

Programme de Capitalisation en Appui à la Politique de Développement Rural

Programme National Agroécologie



Mission d'appui

Évolution des systèmes agraires

Suivi, évaluation des adoptions dans la province de Xieng Khouang

Zone Agriculture de Montagne et Plaine d'altitude

Termes de référence

Mission d'appui
Évolution des systèmes agraires
Suivi, évaluation des adoptions dans la province de Xieng Khouang
Zone Agriculture de Montagne et Plaine d'altitude

Termes de référence

Contexte

Le Programme National Agroécologie (PRONAE) a été défini dans le cadre général du Programme de Capitalisation en Appui à la Politique de Développement Rural (PCADR) comme un appui institutionnel auprès du NAFRI visant à développer des programmes de recherche sur le thème de l'Agriculture de Conservation. Cet institut a pour vocation d'appuyer les PAFOs, les DAFOs et les projets de développement rural sur cette dynamique par la production de recherches innovantes fondées sur la diversité des situations biophysiques et socio-économiques.

La gestion des ressources naturelles, et en particulier du sol, est le principal thème intégrateur et fédérateur des différentes actions de recherche – développement proposées assurant le lien agriculture, élevage, ressources forestières, préservation des infrastructures, qualité de l'eau et de la vie.

La stabilité de ces agricultures a un impact direct sur le développement du Laos sachant que 80% de la population dépend du secteur agricole en milieu rural où la précarité est largement présente. L'évolution rapide des systèmes de production, en relation avec les demandes régionales (Vietnam, Thaïlande et Chine), a une influence directe et souvent brutale sur la pérennité de cette agriculture familiale et de son équilibre social. Comme évoqué dans de nombreux documents officiels du Gouvernement de la RDP Lao le maintien des potentialités de production du milieu doit être à la base de la lutte contre la pauvreté et de l'amélioration des conditions de vie des communautés rurales.

Dans ce contexte, l'objectif général du Programme National Agroécologie est l'appui à la création et à l'adaptation la plus large possible par les agriculteurs, dans les provinces de Xieng Khouang et de Xayabury, de systèmes de production alternatifs aux systèmes d'essartage, qui soient performants, diversifiés et reproductibles, et en même temps protecteurs de l'environnement. Ces nouveaux systèmes doivent être :

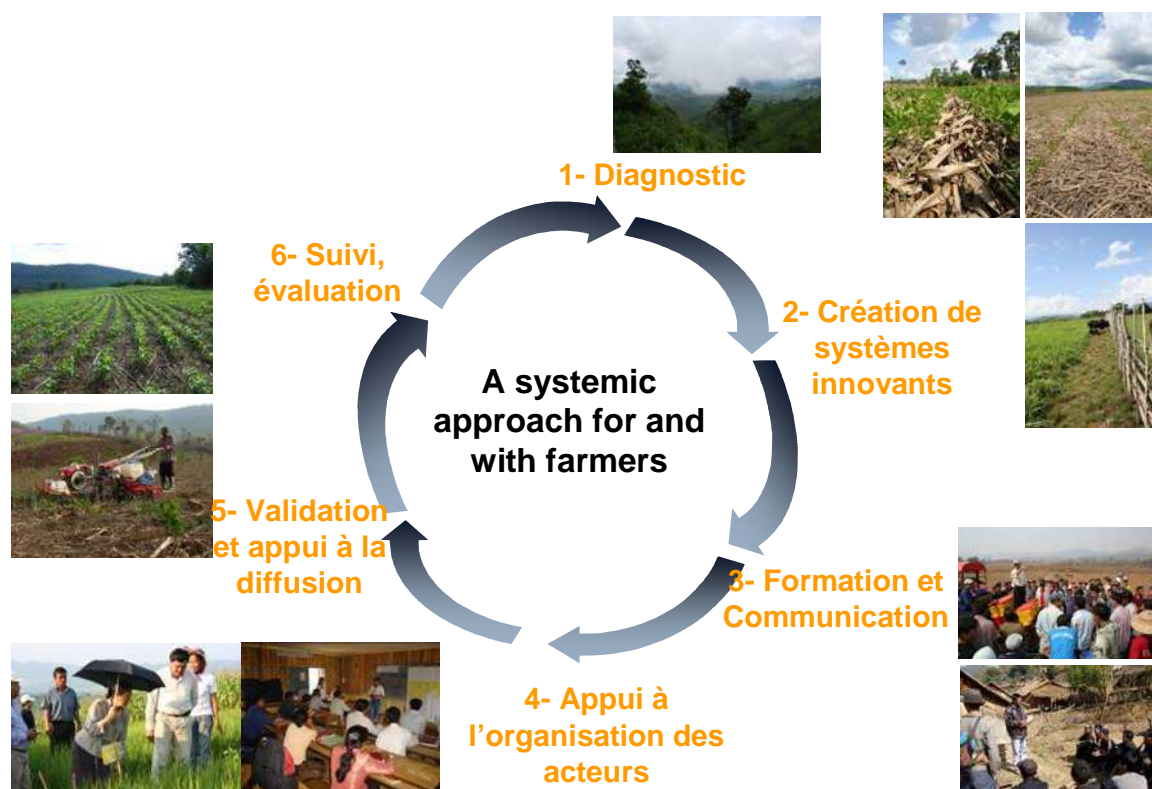
- Accessibles, attrayants et compatibles avec la situation de départ de ces agricultures, avec leurs niveaux de production, de productivité, et de disponibilité en main d'œuvre ;
- Efficaces contre l'érosion des sols et pour l'amélioration de leur fertilité ;
- Stabilisés dans l'espace, conduisant à une réduction des surfaces en défriche-brûlis et à une préservation des ressources naturelles ;
- Des vecteurs d'émergence d'une économie d'échange, de diversification des productions et d'amélioration des conditions de vie des populations rurales.

L'approche suivie se décline autour de deux principes :

- Une approche itérative répondant à la nécessité de retour d'informations permanent de la part de l'ensemble des acteurs du développement afin de valider et d'adapter en "temps réel" l'offre technologique, méthodologique, organisationnelle en fonction de l'évolution du contexte biophysique, socio-économique, politique et de l'expression de la demande. L'évaluation permanente à

chaque étape doit permettre de réajuster les activités en temps réel, de réorienter les programmes et, par conséquent, d'optimiser l'ensemble des ressources.

- Une approche intégrative associant Recherche, Vulgarisation, Formation, ainsi que les processus d'appui institutionnel à l'innovation et à la prise de décision politique, dès le début du projet et tout au long de son cycle. Différentes échelles de travail ont été imbriquées et abordées avec la grande majorité des acteurs du développement rural : agriculteurs, vulgarisateurs, formateurs, chercheurs, secteur privé et bancaire, décideurs politiques...



Ces différentes composantes ont été abordées au sud de la province de Xayabury en partenariat avec le PASS et dans la province de Xieng Khouang avec le projet Nam Ngum. Pour cette province un état initial a été réalisé au cours de la campagne 2003-2004 (Lienhard et al. 2005) ; cette étude avait pour objets :

- De fournir une compréhension globale de la zone d'intervention,
- De préciser pour un certain nombre de familles les stratégies, les différentes composantes du système de production, leurs importances respectives ainsi que les activités extra agricoles.

Suite à cet état des lieux, un programme d'activités a été décliné pour trois districts de cette province (Kham, Nonghet et Pek), où une large gamme de systèmes de production, de conditions pédoclimatiques et culturelles (diversité ethnique) sont représentées.

Trois enjeux majeurs ont été identifiés, il s'agit :

- Aménagement de grands ensembles d'agriculture intégrée en périphérie de Phonsavan (district de Pek),
 - Intensification des systèmes d'élevage de gros ruminants,
 - Production de grains après régénération avec des espèces fourragères ou après écobuage,
- Rizicultures alternatives hors aménagements rizicoles (pénélaine des jarres, district de Pek),
- Amélioration et diversification des systèmes de production traditionnels en zones de montagne (district de Kham et de Nonghet).

Objectifs de l'étude

Une partie des innovations sont diffusées aujourd'hui par deux projets de développement rural ; le PASS qui intervient dans les 4 districts du sud de la province de Xayabury et le projet Nam Ngum dans les provinces de Xieng Khouang, Luang Prabang et Vientiane. De premiers résultats prometteurs ont été obtenus avec ces partenaires mais il faut souligner que l'absence de cadre institutionnel favorable (accès à l'information, aux moyens de production, aux marchés, au crédit...) et de coordination des actions du secteur agricole pénalise aujourd'hui la dynamique en cours.

Dans la dynamique de fin de cycle du PCADR, il est indispensable de transférer les acquis des projets (méthodologie, ressources humaines, capital d'expériences, cadre institutionnel) vers les structures de l'état (MAF, province, district, *Khum ban pattana*), vers les secteurs privé et éducatif, et au sein des villages afin de poursuivre et, si possible, renforcer les dynamiques de développement amorcées. Pour guider cet effort de transfert, il paraît essentiel de caractériser dans le détail : (i) l'évolution récente des conditions socio-économiques et des pratiques agricoles dans les zones d'intervention du PRONAE, du PASS et du projet Nam Ngum, (ii) l'influence de ces projets sur cette évolution, et (iii) les limites rencontrées dans la diffusion de l'innovation. Ainsi, au-delà d'un simple état des lieux *ex post*, l'objectif final de ce travail est de valoriser les enseignements de ces expériences de développement intégré et de les utiliser comme outils d'aide à la prise de décision dans d'autres zones rurales.

Depuis 2005, au sud de la province de Xayaboury, le PASS et le PRONAE se sont engagés dans cette démarche en développant leur propre système de suivi-évaluation. Vu l'intérêt potentiel d'une approche comparative (test de l'adaptabilité et amélioration du système, réflexion sur la représentativité des résultats, analyse multi-échelle, ...) et la diversité de situations qui caractérise la province de Xieng Khouang, il est proposé d'étendre le système de suivi-évaluation mis en place à Xayaboury et, par ce biais, d'entreprendre une analyse de l'évolution des systèmes agraires, du contexte socio-économique et des conditions d'adoption des innovations proposées par le PRONAE dans trois situations agro-écologiques différentes :

- Les plaines d'altitude,
- Les zones d'agriculture de montagne (nationale 6),
- Les bassins de production des districts de Kham et Nonghet centrés sur des productions commerciales (maïs, piment..).

Appui, programmation des activités et produits attendus

Cette étude rentre dans le cadre global du processus de capitalisation du PCADR. Faisant suite à l'état des lieux initial réalisé en 2003-2004 dans la province de Xieng Khouang, elle permettra de caractériser l'évolution récente des pratiques agricoles et du contexte socio-économique dans les zones d'intervention du projet. En outre, elle permettra d'identifier les principaux facteurs conditionnant la prise de décision des différents acteurs concernés par la diffusion et l'adoption de l'innovation (agriculteurs, vulgarisateurs, secteur privé, éducatif, décisionnel).

Il est proposé l'appui d'une équipe de consultants issue du *Centre de Recherche sur les Politiques Agricoles* (NAFRI/PRC) sur une période de 6 mois. Il sera demandé à cette équipe d'intervenir sur les points suivants :

- Analyse de l'évolution des systèmes agraires et du contexte socio-économique à l'échelle régionale,
- Sélection d'un échantillon de villages et de familles représentatifs de la zone et permettant une évaluation de l'étendue du phénomène de diffusion spontanée de l'innovation, de ses contraintes et avantages, et du besoin potentiel en appui technique complémentaire :
 - Deux types de villages : i) villages ayant directement bénéficié de l'appui technique du PRONAE, et ii) villages où le projet n'est pas intervenu,
 - Deux groupes différenciés au sein des villages : i) des familles ayant bénéficié de l'appui technique et/ou de matériel végétal fourni par le PRONAE, et ii) des familles n'ayant pas directement bénéficié de l'appui technique du projet,
- A l'échelle des villages sélectionnés, analyse de l'évolution de la gestion des ressources foncières (critères d'attribution, gestion collective...),
- A l'échelle des ménages échantillonnés, analyse de l'évolution des systèmes de production en relation avec la gestion foncière et les systèmes/technologies proposés par le PRONAE,
- Développement d'un outil d'aide à la prise de décision sous la forme d'un couplage 'base de données – système d'information géographique' :
 - Regroupant les données relatives à l'évolution des systèmes agraires et à l'adoption des innovations,
 - Permettant une actualisation annuelle par les techniciens des PAFO et DAFO.

Cadre juridique et institutionnel

Les consultants devront avoir souscrit une couverture sociale et une assurance rapatriement avant le début de la mission.

Rapport de mission

Un rapport de mission sera rédigé par l'équipe de consultants en anglais et sera transmis au PRONAE ainsi qu'une version informatique complète. Le PRONAE aura à charge d'assurer la diffusion de ces documents auprès du Ministère de l'Agriculture et des Forêts, de la direction générale du NAFRI, de l'unité centrale du PCADR, de la Banque Asiatique de Développement et de l'Agence Française de Développement.

Conditions de paiement

L'équipe de consultants présentera à la direction du PRONAE pour avance une facture d'un montant équivalent à 50 % du total des montants inscrits au budget prévu pour cet appui, à la commande de l'étude et après approbation des termes de référence, soit un montant de 22,012.50 USD et 10,500.00 EUR. Après soumission du rapport provisoire 40% seront versés et 10% après approbation du rapport final.

Budget prévisionnel

		USD / unité	EUR / unité	Quantité	Montant total	
					USD	EUR
Consultant international – coordinateur			350/j	60		21,000
Consultant international – expert		80/j		30	2,400	
Etudiants internationaux (2 pers.)		20/j		150 x 2	6,000	
Traducteurs (2 pers.)		15/j		150 x 2	4,500	
Consultant SIG		320/j		30	9,600	
Equipe PRC (5 pers.)	Enquêtes	20		60 x 5	6,000	
	Saisie	15		40 x 5	3,000	
Equipe DAFO (5 pers.)		4/j		60 x 5	1,200	
Transport avion VTE-XKH (aller-retour)		150/A-R		10	1,500	
Transport VTE-XKH (aller-retour)		15/A-R		25	375	
Location véhicules	Voiture	50/j		60	3,000	
	Moto	5/j		(150 x 2) + (60 x 5)	3,000	
Essence	Voiture	1.5/l		600	900	
	Moto	1.5/l		(400 x 2) + (160 x 5)	2,400	
Fournitures, reprographie, etc.					800	
Imprévus					150	
Total général (USD)					44,825	21,000

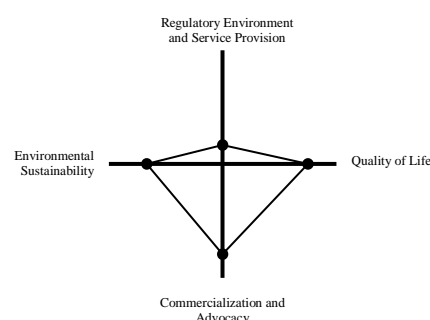
APPENDIX 3

Examples of Database Entries

Improved Pastureland and Cattle Fattening Opportunities on the Plain of Jars (Xieng Khouang)

On altitude plains in Xieng Khouang, large areas of savannah grasslands are “under-utilized” by smallholders with main farming systems based on lowland paddy fields, livestock production with extensive grazing on savannah grasslands and off-farm activities. This ecology represents at least 60,000 ha on three districts (Pek, Phoukhouth and Phaxay).

Improved pastureland is established using no-till technologies (no ploughing, no burning) and the main forage specie used is *Brachiaria ruziziensis* well adapted to acid soils. Native grasses (*Themeda* sp., *Cymbopogon nardus*, *Hyparrhenia* sp.) are controlled by spraying systemic herbicide (Roundup, 3 to 4l/ha) one month prior the sowing. Organic (thermophosphate) and mineral (urea and KCl) fertilizers are broadcasted before sowing (thermophosphate and KCl) and during the rainy season (urea, KCl).



Dimension 1. Quality of Life

Specific training is needed to start this system based on the establishment of improved pastureland. However, farmers have the required skills and technical knowledge to become rapidly independent in establishing new fields and in managing cattle in existing pastures (cattle grazing managed in blocks to allow good forage growth and appropriate fertility management). Low labor input is required to establish pastureland, but equipments (hand tractor, sowing machine, and sprayer) are needed to conduct these activities; they can be shared by several families. However, animals' management required reasonable labor for animals' care and daily water provision.

This system requires initial investment to establish pastureland (fencing, land preparation, seeds, and fertilizers) and to conduct cattle fattening activities (young cattle stock of the family and/or possibility to buy cattle). Infrastructures (equipments) and financials are the more constrained capitals. Credit is essential in this system.

No-till system showed very promising results allowing the use of new lands on the Plain of Jars, increasing the productivity of such lands, and generating new incomes. Forage seed harvesting is the only activity performed during this first season and cattle fattening activities started the second year in order to allow a good establishment of the pasture the first year. Five young cattle can be fattened per hectare and an average farmer can get a net income of 300 USD (not including seed production).

Process of land allotment has been conducted by communities in different villages where such systems have been promoted. This change from community land management to individual land management has positive and negative impacts. Positive in generating new incomes and increasing the productivity of the land allowing in the near future crops diversification as rice. Negative impact if the land “allocation” is not

well distributed (equitable access to land) between members of the same community creating social conflicts.

This system scores high (4) for this criterion due to new land accessibility, generating new commercial opportunities, and increasing incomes. Main constraints are based on infrastructures and financial capitals particularly availability for mechanization and cattle or the possibility to access to credit to buy animals and equipments.

Dimension 2. Environmental Sustainability

The soil is not disturbed by mechanical action while land preparation is based on direct sowing of forage species after control of natural pasture land. Before sowing, in order to control native grasses, herbicide (glyphosate) is used and mineral fertilizers (urea and KCl) are broadcast allowing good establishment of the forage specie. Thermophosphate is classified as organic product.

This system improves soil fertility in a broad sense: physical (bulk density, soil permeability and aggregate stability), biological (soil diversity) and chemical (increase of soil organic matter and stock of organic carbon) characteristics. Use of living fences increase flora (multipurpose species) and fauna (insects, birds) diversities.

This system scores medium (3-4) for this criterion.

Dimension 3. Regulatory Environment and Service Provision

Animal fattening is clearly related to market access and meat demand. Rural areas of Laos have traditionally struggled to find markets for products because of low population density and poor transport links. However, Xieng Khouang province has begun to show a high commercial rate of cattle export to Vietnam (Onekeo, 2005; Syphanravong et al., 2006) and the recent experiences of the Forage for Smallholders Projects (CIAT-NAFRI) and the Small Scale Agro-enterprise Development in the Uplands (SADU-CIAT) show increasing commercial opportunities in places where smallholders are growing forages for cattle feeding. However, market chain has to be improved; traders raise that administrative format and tax contributions have to be simplified to enhance commercialization between districts, provinces and Vietnam.

The local ecologies on schist and granite present good physical properties but low mineral contents (Hacker et al, 1998) with high deficiencies of N, P, K, Ca, Mg and micronutrients (Zn, Bo, Mn). Thermophosphate addition is thus essential, providing reasonable quantities of Ca, Mg and P and allowing implementation of efficient livestock production and cropping systems. A market channel for such fertilizers has been organized by PRONAE in Xieng Khouang province through Vietnamese traders, but this channel is not already operational to scale-up this system.

Moreover, specific equipment adapted to local economic conditions (sowing machine for hand-tractor) must be promoted to decrease labor inputs for land preparation and sowing. The other limiting factor is that the system is perceived as requiring an initial cash investment and credit access is essential.

Promising results have been recorded in producing forage seeds for *Brachiaria* species. Development of specific market channels for seeds could indirectly improve pasture management, avoid high stocking rates and generate new income that could be invested in fertilizer and animal care. The Lao National Agro-Ecology Programme (PRONAE) started promoting forage seed production and the Small Scale Agro-enterprise Development in the Uplands (SADU-CIAT) initiated some activities in designing and facilitating the implementation of agro-enterprise.

On these high plains, innovative farming systems based on direct mulch-based cropping and better integration of livestock and cropping activities could be stable and profitable if, at the same time, economic incentives (access to market, inputs, credit, agriculture equipments and livestock product processing) are promoted.

To conclude this system scores very low (1) for this criterion due to the absence of environment structuring: lack of credit access, inputs, specific equipments, and technical supports from extension agencies.

Dimension 4. Commercialization and Advocacy

Pastureland improvement and no-till system show very good results (reducing production costs and land erosion) on the Plain of Jars and could be extended to staple (rice), cash (maize, soybean), and niche crops (sesame, buckwheat) production.

In conclusion, despite positive economic and technical results with cattle fattening, a global approach involving credit access plus technical and political support has to be defined if productive and efficient systems are to develop in this ecology. This poses a great challenge which, if grasped, could yield great benefits in the upper part of the Nam Ngum river basin.

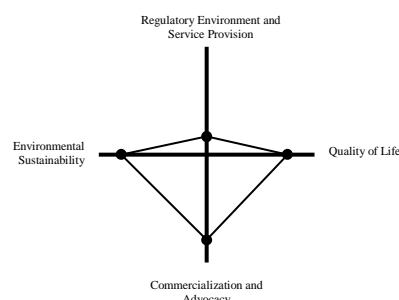
This system scores high (4) for this criterion due to its potential for commercialization and being a good example of advocacy for donors and policy-makers.

Training Materials

<<to be filled>>

Rainfed Rice, Improved Pastureland and Cattle Fattening Activities on the Plain of Jars (Xieng Khouang)

Several options are available for farmers to regenerate and open new lands on the ecology of the Plain of Jars. The first step is based on direct sowing of forage species to conduct cattle fattening activities and to eventually regenerate soils for annual cropping (see previous system). The second system is to associate rice and forage specie to produce a staple crop for farmer and to establish, the same year, pastureland for livestock activities. This system differs from the previous one only by this association between rice and *Brachiaria ruziziensis*; all others technical operations are identical.



Dimension 1. Quality of Life

No-till system showed very promising results allowing the use of new lands on the Plain of Jars, increasing the productivity of such lands, and generating new incomes for the families. This association has positive trait regarding crop diversity and income generation on an ecology generally used for extensive grazing and lowland paddy. Direct benefits of this first season are i) rice and ii) forage seed production which can be sold to other farmers in the village. For the coming seasons, incomes are generated by cattle fattening activities that can be conducted indifferently by man or woman.

Specific training is essential to implement this system. However, human capital, as skill and knowledge, is available to implement such system. Main labor inputs concern rice harvesting and other cultural operations as land preparation and sowing requires low labor if specific equipments are available as sowing machine and sprayer.

Process of land allotment has been conducted by communities in different villages where such systems have been promoted. This change from community land management to individual land management has positive and negative impacts. Positive in generating new incomes and increasing the productivity of the land, but negative impact if the lands are not well distributed (equitable access to land) between members of the same community creating social conflicts.

The main constraints of this system are linked to the infrastructures and financial capitals and the needs for:

- Specific direct sowing machine for tractor or hand-tractor to sow rice and forage specie,
- Specific short cycle rice cultivar in order to complete his cycle before the total establishment of the forage specie which becomes very competitive for nutrients, water and light energy,
- Cattle availability.

This system scores high (4) for this criterion due to new land accessibility, generating new commercial opportunities, and increasing incomes.

Dimension 2. Environmental Sustainability

The soil is not disturbed by mechanical action while land preparation is based on direct sowing of forage species after control of natural pasture land. Before sowing, in order to control native grasses, herbicide (glyphosate) is used and mineral fertilizers (urea and KCl) are broadcast allowing good establishment of the forage specie. Thermophosphate is classified as organic product.

This system improves soil fertility in a broad sense: physical (bulk density, soil permeability and aggregate stability), biological (soil diversity) and chemical (increase on soil organic matter and organic carbon) characteristics. Use of living fences increase flora (multipurpose species) and fauna (insects, birds) diversities. This system scores high (4) for this criterion.

Dimension 3. Regulatory Environment and Service Provision

As described previously the main constraints are related to:

- Low soil fertility and the necessary use of organic and mineral fertilizer. Market chain has to be organized at the local level between Vietnamese traders and local providers,
- Access to specific equipments as sowing machine and sprayers and inputs (forage seeds and herbicides),
- Access to credit provisions to buy inputs, equipments and cattle.

Extension officers have to give technical support and information to smallholders regarding the choice of forage species and rice cultivars.

On these high plains, innovative farming systems based on direct mulch-based cropping and better integration of livestock and cropping activities could be stable and profitable if, at the same time, economic incentives (access to market, inputs, credit, agriculture equipments and livestock product processing) are promoted.

This system scores very low (1) for this criterion due to the absence of environment structuring: lack of credit access, inputs, specific equipments, and technical supports from extension agencies.

Dimension 4. Commercialization and Advocacy

This ecology has a great potential for agricultural productions and the promotion of this system is directly related to political decisions and the recognition to invest in this location and in this alternative to improve livelihoods and to generate new commercial opportunities at the provincial level.

Opening new rainfed areas for rice production on a small-scale basis is a great challenge that could benefit the entire population of the province. The cost of this operation will be low regarding funds invested on lowland paddy fields infrastructures on the Plain of Jars which are globally unused due to the low soil potentiality, lack of alternatives during the dry and cold season, and poor social management of the irrigation network.

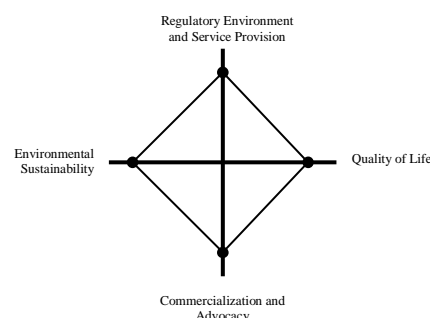
This system scores high (4) for this criterion and particularly as a good example of advocacy for donors and policy-makers.

Training Materials

<<to be filled>>

Maize Production under No-Till System and Intercropping with Rice-Bean (Southern Xayabury)

Over the past fifteen years, farming systems have changed drastically in Laos, with swidden systems giving way to more modern agricultural technologies in many areas. In southern Xayabury, traditional systems have collapsed, with a transition from subsistence agriculture to intensive cultivation of cash crops, led by the demands of the Thai market. Notable changes in agricultural practices have included the adoption of heavy mechanization and use of pesticides. With the support of local traders, maize is now widely sown throughout the region and is spreading to more areas every year. With agricultural intensification, rotational cultivation systems and fallow periods are disappearing, being progressively replaced by a 'resource-mining' agriculture that has serious social and environmental costs, including increased soil erosion (leading to destruction of roads and paddy fields), loss of soil fertility, and chemical pollution of the environment. In view of this situation, the Lao National Agro-Ecology Programme (PRONAE) is implementing an iterative research-development approach oriented on Conservation Agriculture to find innovative systems to revert, the present resource-mining practices in southern Xayabury into no-till system based on permanent soil cover, no soil disturbance, crop rotations and use of relay/cover crops.



Many systems are actually under adoption and validation process by farmer groups. The system described hereafter refers to the intercropping of rice-bean with maize. Maize is commonly sown at the beginning of the rainy season from end of April to mid of May and rice-bean is intercropped in August when maize leaves become senescent and sunshine is sufficient to allow this additional crop to germinate. Maize is commonly harvested in September and rice-bean in earlier December. Rice-bean is also one of the main cash crops commonly used since several decades by smallholders. This system is promoted mainly in Paklay and in some locations in Kenthao districts where farmers produce maize every year due to good soil potentiality and where is very difficult to promote rotational sequence.

Dimension 1. Quality of Life

No-till system for maize production and intercropping with rice-bean showed promising impacts on quality of life, particularly in:

- Reducing production costs for land preparation (ploughing),
- Increasing labor productivity and net income,
- Reducing labor inputs particularly for sowing and manual weeding,
- Reducing greatly the use of herbicide for land preparation and weeds management during maize cycle due to the good weed competitiveness of rice-bean,
- Reducing contact for man, woman and child with seed coated with insecticide using sowing machine,
- Increasing spatial and temporal crop diversity (maize + rice-bean, the same year on the same field),
- Maintaining and improving soil fertility.

Higher income is generated with this system due to soil improvement and better weed control. Rice-bean contributes also to this income even if the yield is relatively low due to late sowing in the season.

However, in order to prevent grazing of rice-bean at the beginning of the dry season, to preserve residues and cover crops during the dry season (problems with wild-fires and cattle grazing), modification of collective land management have to be defined and accepted by the community. These social changes occurred in some locations and are under discussions in others villages. This process should be iterative

and conducted by the own community to avoid conflicts between farmers and between farming components (annual cropping and livestock).

This system scores high (4) for this criterion due to several aspect presented above and to the reduction in use of herbicides.

Dimension 2. Environmental Sustainability

This no-till system and cropping sequence based on maize and rice-bean intercropping presents several positive traits: i) improvement of soil fertility (physical, biological and chemical) and biodiversity, ii) participate to carbon sequestration, and iii) reduce weed pressure by biological control (integrated management of weeds through shade and reduce use of herbicide). Locations where rice-bean is very well established allowed to avoid use of herbicides at the beginning of the rainy season. Thus, this system scores high (4) for this criterion.

Dimension 3. Regulatory Environment and Service Provision

In southern Xayabury since several decades cropping is mainly based on cash crops production as maize, rice-bean, sesame, Job's tears and peanut. In this region, farmers have good access to market, to credit and inputs due to efficient provider's network for sale and supply.

However, regulation and modification of community land management during the dry season would be useful to preserve, as much as possible, residues on the field for the coming cropping season and to improve the integration between cropping and livestock components.

Access to specific equipments, as sowing machines for hand-tractor and hand-jab seeder to intercrop rice-bean with maize, is necessary to improve the dissemination and adoption of this system.

Even if regulations have to be integrate regarding credit (mainly done by traders with high interest rates) and collective land management, we conclude that this system scores high (4) for this criterion due to the actual situation characterized by a high level of commercial commodities.

Dimension 4. Commercialization and Advocacy

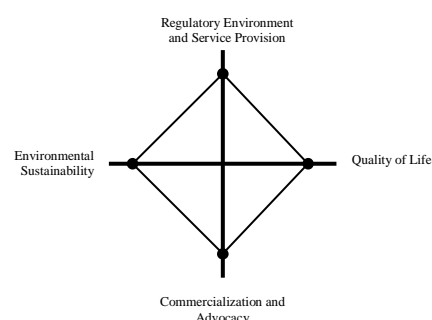
This system is a good example of advocacy for policy-makers scoring high for the quality of life, environmental sustainability and regulatory environment. On the other hand the potential for commercialization is also high due to the fact that this commercial product could be in the near future producing under organic management.

Training Materials

<<to be filled>>

Maize Production, No-Till System and Crop Rotation (Southern Xayabury)

The system described hereafter refers to a rotational sequence between maize and rice-bean under no-till systems and residues management. This system has been widely adopted by farmers in Botene district to decrease the risks related to the soil potentialities (low soil fertility and low water retention capacity due to sandy soils).



Dimension 1. Quality of Life

No-till system for maize production and rotational sequence with rice-bean showed promising impacts on quality of life, particularly in:

- Reducing production costs for land preparation (ploughing),
- Increasing labor productivity and net income,
- Reducing labor inputs particularly for sowing and manual weeding,
- Reducing greatly the use of herbicide for land preparation and weeds management during maize cycle due to the good weed competitiveness of rice-bean,
- Reducing contact for man, woman and child with seed coated with insecticide using sowing machine,
- Maintaining and improving soil fertility.

The main difference with the previous system is based on farmer' strategy related to soil fertility, climatic and economic risks in producing maize every year (intercropped with rice-bean) or in having a rotational sequence between two main crops. Market price of rice-bean can be erratic one year from another one and productivity is susceptible to rainfall distribution in September and October. Usually, farmer who adopt this rotational sequence are located on sandy soil (botene) or in degraded areas (southern kenthao) where cropping maize every year is not highly profitable.

However, in order to preserve residues and cover crops during the dry season, modification of collective land management have to be define and accept by the community. These changes occurred in some locations and are under discussions in others villages.

This system scores high (4) for this criterion due to several aspect presented above and to the reduction in use of herbicides.

Dimension 2. Environmental Sustainability

This no-till system and cropping sequence based on maize and rice-bean sequence presents several positive traits: i) improvement of soil fertility (physical, biological and chemical) and biodiversity, ii) participate to carbon sequestration but less than maize + rice-bean system, and iii) reduce weed pressure by biological control (integrated management of weeds through shade). Thus, this system scores high (4) for this criterion.

Dimension 3. Regulatory Environment and Service Provision

In southern Xayabury since several decades cropping is mainly based on cash crops production as maize, rice-bean, sesame and peanut. In this region, farmers have good access to market, to credit and inputs due to efficient provider's network for sale and supply.

However, regulation and modification of community land management during the dry season would be

useful to preserve, as much as possible, residues on the field for the coming rainy season and to improve the integration between cropping and livestock components.

Access to specific equipments, as sowing machine for hand-tractor, is necessary to improve the dissemination and adoption of this system.

Even if regulations have to be integrated regarding credit (mainly done by traders with high interest rates) and collective land management, we conclude that this system scores high (4) for this criterion.

Dimension 4. Commercialization and Advocacy

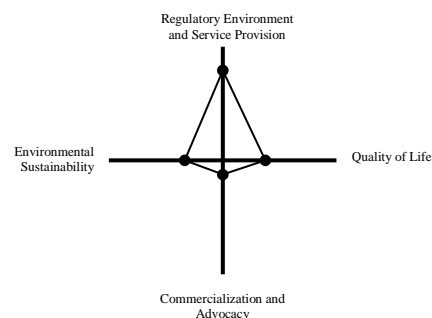
This system is a good example of advocacy for policy-makers scoring high for the quality of life, environmental sustainability and regulatory environment, it scores 4.

Training Materials

<<to be filled>>

Maize Monoculture in Southern Xayabury

PRONAE followed an iterative process to promote not-till systems in this region. Regarding conventional land management based on ploughing, burning of residues and use of herbicide, the first step was to modify the land preparation shifting from mechanical action to no-till system and residues management of the former crop.



Dimension 1. Quality of Life

Positive traits of no-till system and residues management for maize production are:

- Reduction of production costs for land preparation (ploughing),
- Increasing labor productivity and net income,
- Reduction of land erosion,
- Reduction of labor inputs,
- Reducing contact for man, woman and child with seed coated with insecticide using sowing machine.

However, this no-till system is incomplete regarding the main functions provided by *Conventional Agriculture*. Weed control is not efficient due to the absence of crop rotations and use of herbicide tends to increase with years increasing risks of environmental pollution and intoxication of farmers by misuses. This system is clearly not a solution on medium and long-term processes and should be only considered as a first step to promote no-till systems, rotational sequence and use of cover crops. The main constraint refer to the infrastructures capital and the needs of specific equipments to reduce labor requirements for land preparation and sowing.

This system scores medium (2-3) for this criterion due to positive but also negative traits on medium-term process.

Dimension 2. Environmental Sustainability

This no-till system based on maize monoculture can be described as follow:

- Reduction of land erosion but inefficiency of this system to control soil erosion,
- Increase use of herbicides due to maize monoculture and risks of soil and water pollution,
- Low soil improvement due to low level of dry matter input.

Thus, this system scores medium (2) for this criterion.

Dimension 3. Regulatory Environment and Service Provision

In southern Xayabury since several decades cropping is mainly based on cash crops production as maize, rice-bean, sesame and peanut. In this region, farmers have good access to market, to credit and inputs due to efficient provider's network for sale and supply.

Access to specific equipments, as sowing machine for hand-tractor is necessary to improve the dissemination and adoption of this system.

Even if regulations have to be integrate regarding credit (mainly done by traders with high interest rates) and access to equipments, we conclude that this system scores high (4) for this criterion.

Dimension 4. Commercialization and Advocacy

This system is not a good example of advocacy for decision-makers or potentialities for commercialization and this system scores low (1) for this criterion.

Training Materials

<<*to be filled*>>

APPENDIX 4

Terms of reference audiovisual supports

Réalisation de supports audio-visuels pour la capitalisation, la formation et la communication dans le domaine de l'Agriculture de Conservation

1. Historique et contexte

La demande croissante du marché thaïlandais et vietnamien en matières premières agricoles (maïs) se traduit actuellement par le développement d'une agriculture intensive dans de nombreuses provinces du nord du Laos : pratique du labour dans le sens de la pente pour la préparation du sol, utilisation accrue des herbicides tels que l'atrazine, pratique généralisée de la monoculture de maïs, utilisation de variétés hybrides, diminution des périodes de jachère voire disparition de cette pratique. Le développement économique rapide des provinces telles que Sayaboury et Xieng Khouang, qui est par ailleurs favorisé par l'amélioration du réseau routier, masque cependant une réalité beaucoup plus sombre représentée par une dégradation rapide et massive des ressources naturelles et des infrastructures (pistes rurales et casiers rizicoles) en aval des zones pluviales. Ces pratiques minières génèrent des coûts environnementaux, sociaux et économiques élevés fragilisant le développement à venir de ces régions.

Afin de répondre aux grands enjeux de ce développement, le Ministère de l'Agriculture et des Forêts (MAF), les Provinces de Sayaboury et de Xieng Khouang, l'Institut National de Recherche Agronomique et Forestière (NAFRI) en collaboration avec l'Agence Française de Développement (AFD) et le Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD) ont démarré depuis 2003 un programme de recherche-développement (Programme National Agroécologie) qui a pour objectif de créer des systèmes de cultures et de productions innovants qui soient performants, diversifiés, reproductibles, protecteurs de l'environnement et permettant une meilleure gestion des ressources naturelles (biodiversité, sol, séquestration du Carbone). Ces innovations, basées sur les principes de l'Agriculture de Conservation et des Systèmes en semis directs sur Couvert Végétal (SCV), sont adaptées et validées au sein de groupements d'agriculteurs en intégrant leurs situations de départ, leurs niveaux de production, de productivité, et de disponibilité en main d'œuvre.

Depuis 2004, le Ministère de l'Agriculture et des Forêts, dans le cadre du Programme de Capitalisation en Appui à la Politique de Développement Rural (PCADR), a défini un projet de développement rural (Point d'Application du Sud de Sayaboury – PASS) afin d'améliorer la position des agriculteurs face aux filières de production et d'exportation tout en préservant les

potentialités de la zone. Les autres objectifs de ce projet sont centrés sur la diversification des sources de revenus et l'amélioration de la commercialisation des productions agricoles.

Aujourd'hui dans le Sud de la province de Sayaboury, c'est environ 690 familles (39 groupements d'agriculteurs) qui sont appuyées par ces deux projets et les services des districts, pour la mise en place de SCV (830 ha), sans compter la diffusion spontanée. Le niveau d'adoption est néanmoins variable en fonction des situations de départ de ces agricultures (accès aux marchés, aux moyens de production, niveau de dégradation initial...) et des contraintes à l'adoption qui diffèrent entre bassins de production. Dans les zones où les sols présentent un niveau de dégradation avancé le niveau d'adoption est élevé (cas du district de Botene) avec des SCV construits autour d'une rotation biennale maïs – légumineuse (haricot-riz). A l'opposé, dans les zones qui sont essentiellement orientées sur la production de maïs (>85% des surfaces pluviales) et où les surfaces moyennes par famille dépassent 2.5 ha (sud du district de Paklay), la dynamique d'adoption était plus faible jusqu'en 2005. Dans ces situations, il était alors difficile pour les agriculteurs de s'engager dans des systèmes de semis direct pour des raisons de contraintes de pénibilité du travail pour la préparation des parcelles et le semis. Afin de lever ces points de blocage, des équipements spécifiques et adaptés aux différentes échelles de travail (manuel, motoculture et tracteur), ont été introduits par ces deux projets. Ceci s'est traduit par une forte augmentation des surfaces en SCV et du nombre d'adoptants au cours des deux dernières campagnes.

Dans la province de Xieng Khouang, en particulier dans les plaines d'altitude, de nombreux financements (ADB, IFAD) ont été octroyés dans le passé pour assurer la mise en place de périmètres rizicoles avec possibilité d'irrigation en saison des pluies et en saison sèche. L'expérience a montré que la grande majorité de ces dispositifs ne sont pas productifs au vu des investissements consentis et sont déjà pour certains en cours de dégradation marquée. Aujourd'hui, les autorités nationales se sont fixées pour objectif, avec l'appui du PRONAE, de mettre en valeur de vastes unités sous exploitées. Les premiers systèmes proposés et adoptés par une centaine de familles (11 villages) sont basés sur une régénération des sols à partir de l'utilisation d'une gamme d'espèces fourragères tropicales qui sont valorisées par des systèmes d'embouche bovine. Cette régénération des sols permettra par la suite de favoriser la diversification et l'ouverture la plus large possible sur des systèmes de culture vivriers avec le riz comme culture principale.

Vu les résultats acquis par le PRONAE et le PASS, le MAF ainsi que le GoL ont pris en 2005 des décisions politiques (arrêté et décret ministériels) pour la diffusion de l'agroécologie sur le plan national. Et c'est ainsi que depuis 2007, le Programme Sectoriel en Agroécologie (PROSA, MAF-AFD-CIRAD) appuie le MAF pour la mise en œuvre d'une stratégie nationale de diffusion de l'agroécologie. Outre la structuration institutionnelle, le PROSA renforce les capacités nationales en matière de communication et de formation.

2. Objectif principal

Au terme de quatre années d'intervention et au moment où le financement du programme de capitalisation en appui à la politique de développement rural (PCADR) arrive à son terme, le Ministère de l'Agriculture et des Forêts lance, dans le cadre du PCADR et avec l'appui du NAFRI et du PROSA, une série de produits de capitalisation, de communication et de formation dans le domaine de l'*Agriculture de Conservation*.

Cette production correspond aux attentes de notre ministère pour fixer les connaissances dans ce domaine à partir des expériences du PRONAE et du PASS dans les provinces de Xayaboury et de Xieng Khouang. Suite aux réunions du Secteur Agricole et Forestier, qui se sont tenues à Vientiane du 27 au 29 février 2008, notre ministère a souligné la nécessité de rendre accessibles au plus grand

nombre les actions et les acquis de ces deux projets. Et cette capitalisation dans le domaine de l'*Agriculture de Conservation* sera un des principaux produits du PCADR.

Il s'agira en particulier de produire :

- Des supports audio-visuels qui seront accessibles à un large public et sous différents formats (TV, DVD et VCD),
- Des documents techniques pour les agriculteurs et les vulgarisateurs de type *Source Book* regroupant les expériences et les innovations dans le domaine de l'*Agriculture de Conservation*,
- Des supports de formation pour les agronomes et techniciens des projets et du NAFRI,
- Des articles synthétiques sur différents sujets d'intérêt.

Les termes de référence présentés ci-après font référence à la production de supports audio-visuels. Le MAF souhaite présenter, sous forme de film appuyé sur des témoignages et paroles d'acteurs, la dynamique en Agriculture de Conservation autour des expériences du PASS et du PRONAE. Il s'agira également à travers cette opération de renforcer les capacités du NAFRI (*Information management centre*) et des provinces en matière de conception et de réalisation de supports audio-visuels à partir de l'appui technique d'un cinéaste professionnel.

Pour construire ces supports audio-visuels et dans le choix qu'il opérera des interviewes, des situations et des commentaires, le consultant devra faire ressortir :

- l'évolution de l'environnement agricole, économique (accès aux filières d'approvisionnement et de vente) liée aux dynamiques agraires spécifiques du sud de la province de Xayabury et de Xieng Khouang,
- la dégradation des ressources naturelles et des infrastructures (casiers rizicoles, routes...) en résultant,
- les conséquences en terme de cadre de vie,
- les modalités d'intervention des projets et leurs rôles dans la structuration du milieu,
- les propositions techniques avec en particulier :
 - les principes des systèmes sur couvert végétal,
 - la création de systèmes innovants,
 - l'élargissement de l'offre technologique : mécanisation, diversification culturelle et l'élevage,
 - la formation et la sensibilisation des acteurs du développement,
 - l'appui à la diffusion auprès des projets et des structures locales,
- les conditions d'adoption avec en particulier l'analyse du **capital humain** (technicité et compétences requises, force et productivité du travail, rentabilité économique des systèmes), **physique** (accès aux équipements...), **social** (groupements d'agriculteurs, modification de règles de gestion collective de l'espace...), **économique** (accès au crédit) et **naturel** (accès et ressources foncières),
- le cadre institutionnel et décisionnel (rôle des groupements d'agriculteurs, services de la vulgarisation au niveau local, les provinces et les districts, le rôle du ministère de l'agriculture et des forêts, les bailleurs de fonds, les autorités au niveau central : assemblée nationale, gouvernement).

Les projets mettront à disposition les documents existants, leurs connaissances du milieu biophysique, socio-économique et des acteurs (agriculteurs, commerçants – exportateurs, prestataires de services, vulgarisateurs, décideurs...).

L'élaboration des documentaires et films techniques suivra un planning précis (cf chronogramme) alternant de façon itérative les phases de création (scénario, prise de vues, mise en scène, commentaires, montage) et les phases de validation:

1. En fonction des documents disponibles et des rencontres effectuées, le consultant et l'équipe technique fourniront des premiers documents comprenant une intention de réalisation et un synopsis qui fera apparaître le fil conducteur des documentaires et des vidéos techniques, les principaux interlocuteurs et les thèmes traités.
2. Ces documents seront soumis à l'avis et l'appréciation du comité de validation, et, dans le même temps, le consultant et l'équipe technique effectueront un repérage sur place en vue de confronter la première approche à la réalité du projet et à préparer le tournage.
3. En fonction des données issues du terrain et des avis et recommandations formulées par le comité de validation, le consultant enrichira le premier document écrit pour le rendre le plus complet possible. Ce document servira de conducteur définitif pour le tournage.
4. Après les tournages et à partir des éléments et de la matière ramenés, le consultant et l'équipe technique fourniront un plan de montage dans lequel seront décrits précisément les images, les commentaires et les interventions des interlocuteurs. Avant les montages, le comité de validation donnera un avis.
5. Une dernière étape de validation aura lieu à la fin des montages et avant l'enregistrement des commentaires et du mixage.

Il faut noter que la première étape de validation est sans doute la plus importante car elle détermine des choix essentiels ; elle dessine les orientations majeures du film, particulièrement pour le tournage, qui sont généralement irréversibles.

3. Cadre institutionnel

Le département de la planification et de la coopération internationale du MAF, en tant que maître d'ouvrage du PCADR et du PROSA, délègue la maîtrise d'œuvre de ce projet au Centre de gestion de l'information du NAFRI (*Information management centre – IMC*). Le NAFRI possède à travers ce centre les ressources humaines et techniques nécessaires pour mener à bien cette opération.

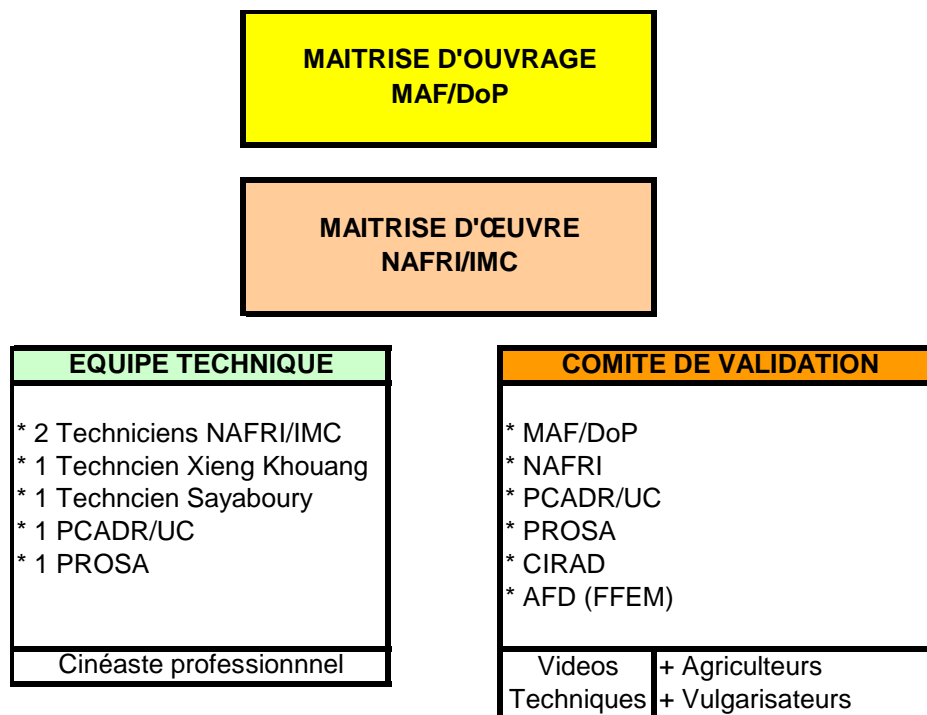
Deux techniciens cinéastes du centre IMC seront retenus pour cette opération et interviendront conjointement avec un cinéaste de chaque province et issu du département de l'information et de la culture, une personne de l'unité centrale du PCAR et une personne du PROSA. Les 4 techniciens cinéastes seront formés par le consultant aux prises de vues et au montage des supports audio-visuels.

Un comité sera chargé de la validation des différentes étapes qui ont décrites ci-dessus. Il regroupera :

- le département de la planification et de la coopération internationale,
- le NAFRI,
- le PCADR (PCADR/UC),
- le PROSA,
- l'Agence Française de Développement qui représentera également le FFEM,
- le CIRAD.

N.B. : En ce qui concerne les vidéos techniques, il conviendra d'associer des agriculteurs et des vulgarisateurs (DAFOS et Projets) aux processus de validation.

Le schéma général de fonctionnement est le suivant :



4. Objectifs, cibles et formats

Documentaire à vocation internationale (52')

Ce documentaire permettra de raconter la mise en place d'une agriculture de conservation à travers deux provinces du Laos en donnant la parole aux différents acteurs du développement rural (agriculteurs, vulgarisateurs et commerçants). Il s'agit de montrer dans quelle mesure cette dynamique, en intégrant les acteurs, a participé à la construction du politique, au niveau local, en débordant sur le niveau national politique sectorielle. Ce projet interroge plus largement la façon de construire un projet de recherche - développement en mettant en présence différents acteurs concernés par l'*Agriculture de Conservation*, et de peser ainsi sur les choix politiques nationaux. Il s'agira aussi de montrer l'importance d'intégrer le capital naturel dans les politiques de développement rural.

Format de diffusion : télévision, DVD et site Internet

Cibles : large public international

Série de documentaires à vocation nationale (10' à 15')

Cette série de documentaire permettra d'illustrer pour un large public les expériences de différents acteurs dans le domaine de l'*Agriculture de Conservation*. Ces expériences seront illustrées à partir du suivi de familles et de vulgarisateurs tout au long de la campagne agricole. Il sera fait référence à travers ces interventions aux conditions de validité des systèmes et des innovations proposées.

Format de diffusion : télévision, VCD et site Internet

Cibles : large public national

Série de vidéos techniques (10' à 30')

Cette série de vidéos techniques sera conçue comme supports de formation et de capitalisation sur différents thèmes techniques. Pour chacun de ces thèmes techniques les conditions de validité environnementale et socio-économique seront précisées. Les sujets suivants seront abordés :

- Les grands principes de fonctionnement des systèmes SCV,
- la mise en place, la gestion et les performances technico-économiques des systèmes innovants : choix des rotations, intégration agriculture – élevage, gestion des cultures...,
- la gestion et la restauration de la fertilité physique, chimique et biologique des sols,
- la gestion des adventices dans les systèmes SCV,
- la gestion des équipements de semis direct (semoirs, pulvérisateurs, rouleau – couteau),
- la manipulation des intrants,
- les filières d'élevage (bovin et porcin),
- la réalisation de supports de formation,
- la concertation entre acteurs (échanges entre groupements, journées de champ).

Format de diffusion : VCD et site Internet

Cibles : Agriculteurs, groupes d'agriculteurs, autorités locales, petites et moyennes agro-entreprises, les services Agricoles et forestiers de vulgarisation au niveau des Districts et des Provinces, les autorités locales, les petites et moyennes agro-entreprises, les organisations relais en appui au secteur commercial, les projets de développement rural, le secteur privé, les écoles et faculté d'agriculture.

5. Consultant et périodes de réalisation

Le consultant identifié par le MAF pour ce projet est M. Denis Victot, réalisateur et spécialiste des documentaires. Il a déjà réalisé plusieurs films qui ont été diffusés sur des chaînes internationales.

Ce consultant interviendra au Laos pour une durée de 53 jours répartie sur trois périodes au cours desquelles il interviendra en étroite concertation avec les agents de NAFRI-ICM et des provinces impliquées dans ce projet.

Six personnes seront associées à ce projet et constitueront l'équipe technique. Il s'agit de deux techniciens issus de NAFRI – ICM (M. Duensavan Phuangkhamshao et de Mlle Soumpholpakdy), de deux personnes issues des départements de l'information et de la culture des provinces de Xieng Khouang et de Xayabury (M. Samlane Inthavong et M. Khamphanh Vorasing), du coordinateur du PROSA (M. Thongchanh Bounthala) et d'une personne de l'unité centrale du PCADR. Les 4 techniciens cinéastes devront s'investir pour une durée totale de 80 jours. Au cours de ces périodes, et en application pratique directe de la formation aux prises de vue et au montage qu'ils auront reçue de la part du cinéaste professionnel, ils contribueront à la réalisation des documentaires à vocation nationale et assureront la réalisation des vidéos techniques.

La répartition des activités est présentée dans le tableau suivant :

Résultats attendus et moyens de diffusion	Public visé	Tournage	Montage	Partenaires associés
Documentaire 1 h à vocation internationale (TV + DVD + Internet)	Large public international	D. Victot + Formation	D. Victot + Formation	NAFRI MAF/ITC Provinces et /ou Districts Xieng Khouang et Sayaboury NAFES
Série de 6 à 8 documentaires (20 à 30 mn) pour télévision nationale (TV + VCD + Internet)	Large public national	D. Victot + Equipe Technique	D. Victot + Equipe Technique	
Série de vidéos thématiques techniques Lao Extension system (VCD + Internet)	Agriculteurs Vulgarisateurs et l'ensemble des acteurs du développement rural	Equipe Technique	Equipe Technique	

6. Financement

Il est proposé que le PCADR contribue au financement relatif à la formation des techniciens nationaux et à la diffusion des différents supports au niveau national. Le PROSA sur financement CIRAD prendra en charge le coût de l'expertise internationale. Il est proposé à PAMPA de financer les besoins qui ne peuvent être couverts par les projets nationaux et qui concernent une contribution aux frais de déplacements locaux, et la prise en charge des frais de traduction et de sous-titrage (en vue de valorisation régionale et de mise en ligne sur site web).

On trouvera le plan de financement proposé ci-après.

	Units	Cost	Total	Expected sources of funding				
				PCADR	CIRAD (PROSA)	CIRAD	PAMPA	ORCATAD
Filming			5 500 €		5 500 €			
Direct camera editing			7 900 €		7 900 €			
Office			480 €		480 €			
International travels from France to Laos	3	1 200 €	3 600 €		3 600 €			
Perdiem external assistance	40	20 €	800 €		800 €			
Fee for training	8	120 €	960 €		960 €			
Travels in Laos			3 200 €				1 700 €	1 500 €
Perdiem National team	162	20 €	3 240 €					3 240 €
Per diem for Provincial cineast			3 000 €					3 000 €
Translation and subtitle			6 600 €				6 600 €	
Editing and broadcasting DVD and VCD			8 000 €	4 000 €			4 000 €	
Equipment (video recorder and computer) *			8 000 €			8000		
Office renovation			5 000 €			5000		
Total			56 280 €	4 000 €	19 240 €	13 000 €	12 300 €	7 740 €

*: L'équipement audio-visuel et informatique financé par ailleurs sur UE/NAFRI/ORCATAD et PROSA/AFD pourra être aussi sollicité ainsi que les infrastructures d'accueil disponibles (bureaux de Vientiane et des provinces de PROSA et PRONAE).

7. Calendrier prévisionnel

L'ensemble des activités s'échelonne du 15 mars au 31 décembre 2008.

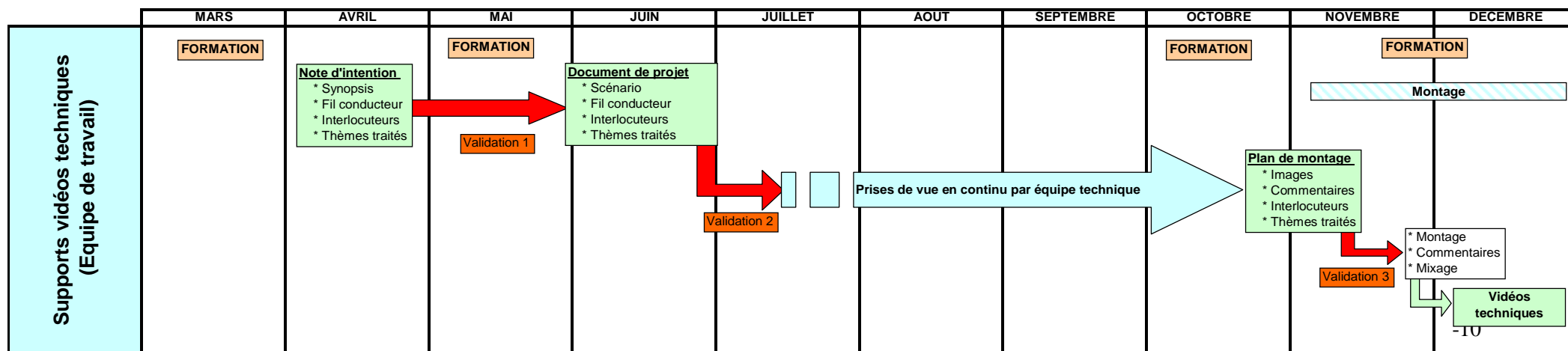
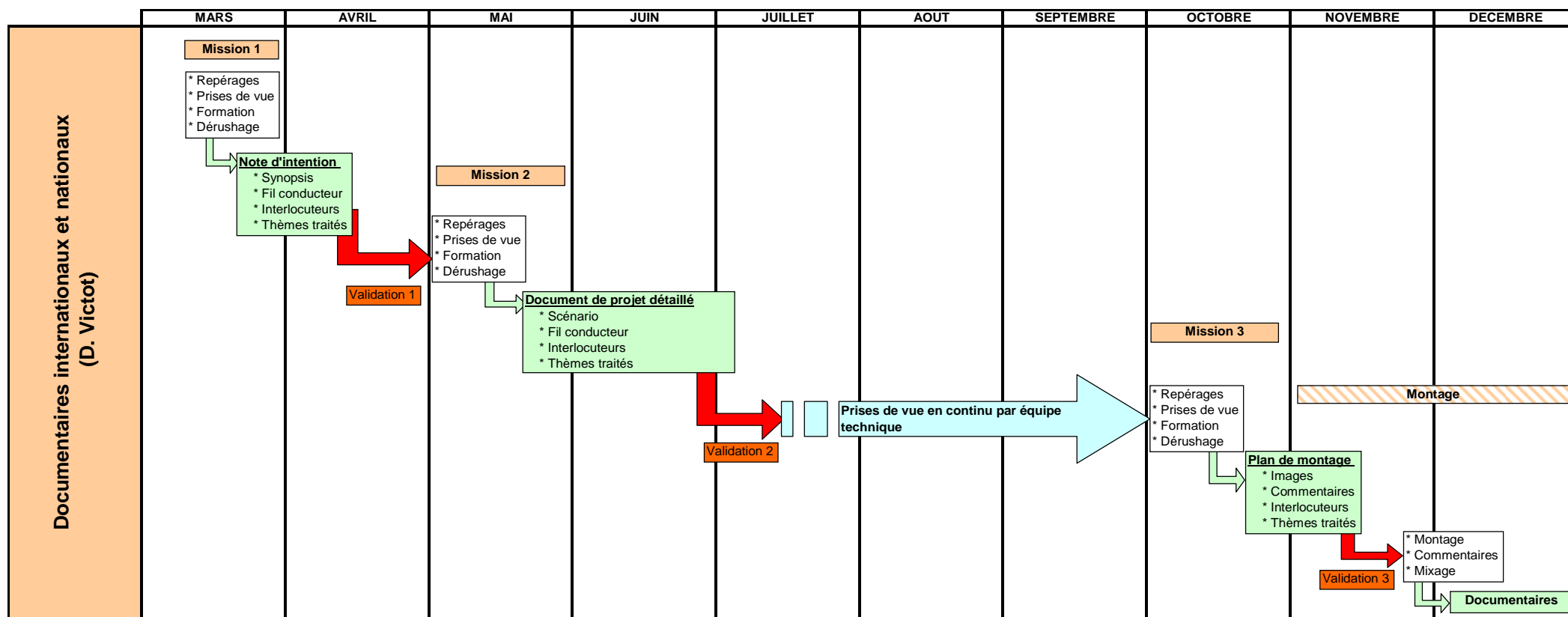
En ce qui concerne les activités de création de supports audio-visuels, il est prévu 3 missions de l'expert cinéaste français :

- Du 12 mars au 25 mars,
- 3 semaines au mois de mai,
- 3 semaines au mois d'octobre.

Le programme de la première mission est le suivant.

	<i>Objectif</i>	<i>Lieu</i>
12 mars	16h40 : Arrivée de M. Denis VICTOT	Vientiane
13 mars	>Matinée : Présentation de la mission auprès de MAF, PCADR, NAFRI, PROSA et PRONAE Réunion de démarrage avec la direction générale du NAFRI >Après-midi : Préparation matériel, présentation du matériel équipe lao	Vientiane
14 mars	7h00-13h00 : trajet VTE-Kenthao (en voiture par la Thaïlande) 14h00: Préparation Matériel+Repérage	District de Kenthao (axe T9)
15-18 mars	Repérage+Tournage Prises prioritaires: 1) Labour 2) Commercialisation du maïs à la frontière lao-thaï 3) Feux- Brûlis 4) Vues générales : panoramiques, forêts, infrastructures, écoles, temples, rivières... 5) Réunions dans les villages	3 districts : - Districts de Kenthao et Paklay (Axe T9-T2) - District de Botène
18 mars	Après-midi (vers 16-17h) : retour à Vientiane	
19 mars	>Matinée : préparation du matériel 12h50 : Départ en avion pour Xieng Khouang >Après-midi : préparation + Repérage	
20-23 mars	Tournage Prises prioritaires : 1) Brûlis 2) Labour 3) Commercialisation frontière Lao-Viet 4) Vues générales 5) Réunions	
23 mars	15h : Départ XKG-VTE	
24 -25 mars	Débriefing, Derushage, fourniture du premier document comprenant une intention de réalisation et un synopsis qui fera apparaître le fil conducteur	PROSA, VTE
25 mars	16h30 : Départ de M. Denis VICTOT	

8. Chronogramme des activités, des phases de validation et des résultats attendus



APPENDIX 5

Summary

Agrarian transition in Laos: Intensification, diversification and spatial differentiation in the southern Sayaboury province

Introduction

Since the late 1980s, the Laotian authorities have engaged in a deep economic reform which has for main objective the development of a market economy in the country. The main framework for the reform was introduced in 1986 under the name of *jin tanakaan mai* or ‘New Economic Mechanism’ (NEM). Developed partly as a response to requests from international donors, the policy has consisted in important regulatory reforms oriented towards a progressive liberalisation of the domestic economy – e.g. tax system restructuring, finance and trade deregulation, promotion of foreign investment, privatisation measures and creation of property rights (Rigg 2005). With regard to the agricultural sector, the NEM emphasised that one stage of the transition towards market economy is the abandonment of shifting cultivation practices in exchange for intensive, market-oriented agriculture. Since then, the government has constantly reaffirmed this objective which appears now as a core element of the rural development policy of the country (e.g. GoL 1999, 2003).

One of the main outputs of this development strategy has been the national Land Use Planning and Land Allocation (LUPLA) program. Implemented from the early 1990s, the main objectives of this program are “to stop deforestation (deemed to result mainly from swidden agriculture), to intensify agricultural production and to improve the government revenue base through land taxation. Private ownership of land and increased tenure security are expected to encourage agricultural investment, intensive use of land and the rise of a market-oriented agriculture” (Evrard 2004: 1). In practice, undertaken at the village scale, the LUPLA consists of the delimitation of the land available for agricultural purposes, its allocation to households and the zoning of the remaining land in various classes of protected forests. Along with an effective limitation of the land available per capita, the

stated intentions of the program – “to encourage people to use their creativeness, efforts and capital in the reform and development of the land in a serious manner” and “to produce commercial products” (GoL 1995: 4-5) – clearly indicate that the land reform is expected to reorient rural livelihoods. In other words, by limiting the extent of the land available for agricultural purposes, farmers would be forced to intensify their production practices and to develop economic alternatives such as market-oriented production.

Along with the national Land Use Planning and Land Allocation program, an important effort of the Laotian government and many of its international development partners has been put into the improvement of Laos’ exchange infrastructures.

Characterized by a long border shared with Thailand and fairly productive soils (compared to the rest of the country), the Sayaboury province has long been put to the forefront of the rural development strategy by the Laotian authorities.

Over the past twenty years, livelihoods in the region have undergone drastic change from subsistence economy based on shifting cultivation to market-oriented and export economy based on intensive farming of cash crops (e.g. maize, groundnut, sesame). Through this process, fallows and slash-and-burn – the traditional weed-control and soil fertilization practices – have progressively been replaced by mechanized tillage, chemical inputs and hybrid seeds.

This paper argues that the agrarian transition in the region hinges on two parallel driving forces: a first one that pushes towards the expansion of the transitional area, and a second one that leads to livelihood diversification. With the development and improvement of the exchange infrastructures (e.g. roads, border posts), financial capital is moving from the pioneer areas of the transition towards newly accessible areas. Credit and collection systems develop with the support of traders enriched in areas previously engaged in the transition. Local farmers are subjected to new market incentives; they gain access to new farming inputs, allowing them to intensify their agricultural practices and leading to a rapid expansion of the transitional area.

However, in many instances, intensification of agriculture and increased land pressure leads to significant levels of land degradation. Indeed, on the relatively steep slopes of the region, the abandonment of the fallowing practice and the adoption of heavy mechanization for tillage engender increased weed pressure, significant soil erosion rates and an associated decline in soil

fertility. Despite the attempts of the farmers to counterbalance land degradation through an increase in the use of herbicides and chemical fertilizers, on the relatively short term, the productivity of the farming systems decreases, forcing local populations to search for alternatives. This situation is illustrated by two recent developments. With the support of the abovementioned development projects, DMC systems are rapidly spreading throughout the region, to the point of upstaging the conventional techniques in some villages. At the same time, local populations are diversifying their activities. Farmers who had formerly adopted monoculture systems on their land are now cultivating three or four different crops and a significant part of the population has developed off-farm or non-farm occupations.

In some measure thus, rather than an expanding area, the agrarian transition observed is more representative of a wave: financial capital flows into the region, farmers intensify their practices, land is rapidly degraded, the financial capital moves to new regions and farmers are left looking for alternatives to cope with land degradation.

In the end, the paper also highlights that the agrarian transition underway is not a uniform process throughout the region. Even when observed at a relatively small scale, it is characterized by an important spatial heterogeneity which can be explained by local variations in climate and ecological conditions.

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